THE

ENGINEERING AND MINING JOURNAL.

VOLUME XLVII., JANUARY TO JUNE, 1889

INDEX.

A

Aaron, C. H., on Cupric Chloride & Russell's Solution in Silver Leaching....434, 498, 563
Abbott, A. V., Boston Hot Water Distribution.... 9
Abbott, Jere.... 375
Accidents by Explosives, Protection Against.... 562
Accidents, Preventable.... 539
Acid, Safe Transportation of Sulphuric.... 593
Acre-Foot, a New Irrigation Unit.... 417
Act, the Inter state Commerce.... 391
Ad m Coke Bottom Mfg. Co., Pa.... 216
Adams Concentrating Mill, Rico, Colo. 595
Adams Coke Oven Co., Pa.... 376
Adams Mg. Co., Colo., 219, 284, 374, 507, 573
Adams, R., U. S. Minister to Brazil.... 329
Addie Mine, Dak.... 375
Adelaide Copper Co., Nev.....171, 550
Adventure Mine, Mich.... 419
African Diamond Industry 14
African Gold Fields.....12, 409
African Gold Returns.... 11
African Mines & English Mg. Companies.... 273
Agassiz Con. Mg. Co., Colo.... 528
Agnes Mine, Colo.... 353
Agreement of the Bituminous Coal Trade 278
Agricultural Implements for China... 217
Agricultural Lands Cannot be Located as Mineral.... 280
Air Compressor Lubrication.... 385
*Air Compressors, Sectional, Rand. 388
Air Compressors, the Ingersoll-Sergeant.....432, 504
Air Propeller.... 280
Air System, the Popp Compressed.... 458
Alabama C. & I. Industries in 1888.... 47
Alabama C., I., L. & Col. Co., Ltd.... 263
Alabama, Cost of Steel Making in.... 214
Alabama Gold Fields.... 458
Alabama Mining News, 72, 94, 122, 218, 263, 283, 373, 527, 548
Alabama, Wages in Coal Mining in 1888.... 188
Alaska & Brit. Col., Boundary Line.. 17
Alaska Gold Mg. Co., Alas....373, 395, 507
Alaska Mine, Cal.... 462
Alaska Mg. & Expl. Co., Ltd., Alaska. 263
Alaska Mg. & Mill. Co., Alaska.... 440
Alaska Mg. News, 17, 263, 373, 396, 440, 507
Alaskan Mines and the Alien Act.... 429
Albany & Boston Mg. Co., Mich.... 241
Aldama Mine, Guerrero, Mex 420
Alexander City Gold Mg. Co., Ala.... 218
Algerian Mining.... 327
Alice G. & S. Mg. Co., Mont., 51, 193, 354, 355, 398, 485
Alice Mine, Cal.... 353
Alien Act and its Effect on Mining, 216, 429
Alkaline Reduction Syndicate, Ltd., Eng.... 395
Allegheny & Greenwood Oil & Gas Co., N. Y.... 19
Allegheny Bessemer Steel Works, Pa. 94
Allen, Taylor.... 148
Allentown Roll. Mill, Pa.... 329
Alley, John B.... 220
Alliance Aluminum Co., England.... 395
Alliance Coal & Mg. Co., Pa.... 464
Alliance Mg. Co., Utah, 97, 194, 332, 441, 509, 551
Allied Mine, Colo.... 330
Allis' Compound Engines.... 439
Allis, Edward P.....329, 352
Allis, E. P. & Co.....16, 352, 439
Allouez Mg. Co., Mich.....171, 242, 354
Alloy Copper Antimony.... 234
Alma & Nellie Wood Cons. Mg. Co., Idaho.... 241
Almaden Mine, Spain.... 311
Almaden Quicksilver Mines in Spain and California.....10, 544
Alpha Cons. Mg. Co., Nev., 82, 173, 266, 356, 398, 486, 550
Alpha Mg. Claim, Dak.... 485
Alpine Mg. Co , Utah.... 441
*Almaden, Spain, Treatment of Cinnabar Fines.... 544
Alta Mine, Mont.... 508
Alta Mg. Co., Nev., 18, 51, 82, 172, 173, 220, 266, 337, 354, 356, 465, 508, 529, 552
*Alternating Current Meter, the Westinghouse.... 412
Alternating Dynamos, Westinghouse, 461
Alto Mg. & Sm. Co., Utah.... 97
Alturas Mg. Co., Ltd, Idaho, 193, 306, 397, 508, 550
Aluminum, Cowles Patents Sustained in Germany.... 166
Aluminum by the Heroult Process... 121
Aluminum, Influence of on Iron Castings.... 396
Aluminum Manufacture in France... 327
Aluminum Manufacture, Pearson's Improvements in.... 571
Aluminum Process, Cowles & Heroult.....386, 387
Alvarado, Juan C.... 49
Alvarez Mine, Guerrero, Mex.... 420
Amador G. Mg. Co., Cal., 17, 22, 58, 95, 122, 171, 218, 283, 353, 374, 462, 507, 509, 575, 595
Amador Queen Mg. Co., Cal.....95, 330
Amalgamated Assn. of I. and S. Workers.....305, 373, 396, 484, 527, 572
Amalgamation Process, Wiswell....4, 48
Amalgamator, the Brewster Centrifugal Tests of at Homestake Mg. Co., Dak.... 17
Amargosa Mine, Sonora, Mex.... 98
Amarillas Mine, Sonora, Mex.... 442
Amazon Oil Co., O.... 124
American Art Industry, Exhibition of. 484
American Assn. Advancement of Science.....571, 572
American Assn., Tenn 16, 551
American Chemical Society.... 517
American Engineers Abroad, 539, 548, 586
American Goods Imitated by English Manufacturers.... 407
American Goods in Australia.... 136
American Goods in England.... 16
American Goods Wanted Abroad, 218, 329, 418
American Institute El. Engineers. 484, 572
American Institute Mg. Engineers. 16, 170, 181, 206, 215, 230, 263, 329, 461, 584
American Institute, N. Y., Report of. 146
American I. & S. Assn. 77, 106, 393
American Locomotives in Japan.... 138
American Machinery, Exports of.... 204
American Machinery, a Good Field for in Africa.... 133
American Manufacturer.... 396
American Mine, Nuevo Leon, Mex ... 332
American Mg. Co., Ark.... 573
American Mg. Co., Colo 330, 440, 553
American Mining Stocks Listed in Paris 466
American Mines, Dividends Paid by in 1888.... 28
American Mines in London.... 135
American Ozokerite.....121, 295, 327
American Paper going to Australia.. 327
American Patents Limited by Foreign 159
American Pig-Iron.... 37
American Pig-Iron Storage Warrant Co.... 334
American Shop Tools in England..... 412
American Smelter, Colo 50
American Social Science Assn.... 548
American Soc. of Civil Engineers, 71, 461, 517, 584
American Soc. of Civil Engineers and the Johnstown Disaster.... 517
American Soc. Mech. Engineers 461
American Style Necessary to Sell Foreign Tools.... 216
American Tube & Iron Co., Pipe Making Record.... 505
American Well Works, Ill.... 594
Amity Mine, Colo.... 397
Ammeberg Zinc Mines, Sweden..... 368
Ammonia and Chlorine, Recovery of, in the Ammonia Soda Process..... 160
Amora Mg. Co., Mich.... 421
Amy & Silversmith Mg. Co., Mont.... 508
Amygdaloid Mg. Co., Mich.... 508
Anaconda Mg. Co., Mont., 97, 151, 264, 267, 284, 441, 452, 508, 595
Anaconda Mine, Mont., The Cost of Copper at 452
Anchor Mg. Co., Utah.....441, 574
Anderson, Gen. A.... 461
Anderson's Process for Water Purification.... 14
Anderton Hydraulic Lift 410
Andes Mg. Co., Nev., 82, 173, 266, 356, 465, 552
Andrews & Chambers, Ky.... 17
Angel Mg. Co., Utah.... 52
Anglo-African Diamond Co., Africa.. 551
Anglo-American Oil Co.... 122
Anglo-Canadian Phosphate Co., Canada.... 534
Anglo-Montana Mg. Co., Mont 26
Annual Report of the Chief of Ordnance for the Fiscal Year Ended June 30th, 1888.... 328
Annual Report of the Consol. Stock & Petroleum Exchange N. Y. for 1889. 547
Annual Report of the Trustees of the State Museum of Natural History for the year 1887.... 121
Annual Statistical Report of the Sec'y to the Members of the British Iron Trade Ass. on the Home & Foreign Iron & Steel Industries in 1888..... 593
Anthracite Coal Deposits in Sonora, Mex.... 464
Anthracite Coal, Discovery of, in Crow Creek Reservation, Dak.... 17
Anthracite Coal,. Production of, 75, 197 288, 400, 422 487, 598,
Anthracite Coal Trade.....Weekly
Anthracite Combination & Quota of Companies.... 288
Anthracite Cos., Meeting of Sales Agents of, in New York.... 266
Anthracite—Iron, Semi-Centennial.. 134
Anthracite Mines, Gunnison Co., Colo. 50
Anthracite, Prices of.... 356
Anthracite, Reduction of Tolls on.... 356
Anthracite Retail Prices in 1888 at Buffalo.... 127
Anthracite Shipments in 1888. 20
Anthracite, Weight per Cubic Foot of Different Sizes of.... 1, 496
Anthracite Wholesale Circular Prices in 1888 at Buffalo.... 127
Antimony, Copper Alloy.... 234
Antimony, Detection of, in Minerals.. 542
Antimony Market in 1888.... 35
Antimony Market Report .....Weekly
Antimony Ore, Dry Concentration of. 187
Antimony, Value of Crude.... 298
Antioch Mine, Colo.... 484
Antler Mine, Ariz.... 374
Anvil Mine, Mich.... 397, 421
Apatite Deposits of Ontario.... 194
Apex Mg. Co., Utah.....441, 596
*Appliances Used in Irrigation...6, 88, 323
Arbacoochee Gold District, Ala..... 458
Arellano, Filipe.... 125
Arenol Mine, Vera Cruz, Mex.... 286
Argentiferous Zinc Blende and Galena Ore, Lixiviation of..138, 157, 163, 189, 236, 251, 255, 319, 498
Argentine Finance.... 364
Argentine Mg. Co., Mont.... 596
Argentine Republic Mg. News.....111, 125
Argentine Republic Statistics..... 1
Argo Mine, Colo.... 264
Argyle Copper Mine, Nova Scotia 52
Arid Lands, Senator Stewart's Committee to Investigate the Subject of Reclaiming.... 288
*Arid Lands, the Irrigation of..... .. 6
Arizona, a New Gold Field in..... 275
Arizona Copper Co., Ariz.....17, 374
Arizona Copper Industry.....30, 432, 519
Arizona Land Decision.... 260
Arizona Mining Interests.... 134
Arizona Mining News, 17, 72, 95, 146, 171, 192, 218, 249, 263, 305, 352, 374, 396, 408, 419, 440, 461, 484, 507, 527, 548, 573, 594
Arizona, the Reymert Manganiferous Lode Formation.... 139
Arizona Trust & Mort. Co., Ariz..... 17
Arkansas Geological Survey.....274, 341
Arkansas Mg. & Invest. Co., Ark.305, 484
Arkansas Mg. News..122, 305, 484, 507, 573
Arkansas Valley Sm. Co., Colo.....50, 192
*Arkansas, Zinc Mining in.... 431
Arkins, Pa.... 125
Arlington, D. C.... 49
Armantina Mine, Michoacan, Mex.... 286
Arminius Copper Mines Co., Va..... 52
Armor, Compound vs. Steel Plates.... 216
Armor for the War Ships of the Future.... 252
Arms, Bell & Co., Ohio..... 330
Aron, Joseph.... 221
Artesian Wells as a Source of Motive Power.... 221, 327
Arthur, P. M., Chief Eng. of the Broth. of Loco. Engrs.... 49
Artificial Copper.... 527
Artificial Emeralds.... 302
Asbestos, Crushed, Duty on.... 49
Asbestos, Deposit of, in San Diego Co., Cal.... 462
Ashburner, Chas. A. 146, 259, 352, 572
Ashburner, Charles A., on Production of Coal in the U. S. in 1888..... 259
Ashland Fire Brick Co.... 594
Ashland I. & S. Co., Wis.... 170
Asia Mining News.... 486
Asphalt Deposits, Colo.... 330
Asphalt Deposits, Utah.... 397
Asphalt for Roofing and Paving..... 527
Asphaltum Co., Colo.... 330
Aspen Mg. & Sm. Co., Colo., 58, 123, 173, 241, 264, 309, 333, 355, 440, 443, 549
Aspen Mg. & Sm. Co., Colo., & W. R. Rust.... 264
Aspen Mountain R. R. Co., Colo..... 306
Aspen Reduction & Refg. Co., Colo... 595
Aspen Transportation Co., Colo..... 284
Assay Commission of 1888.... 71
Assayer's Manual.... 547
Assay of Copper, Electrolytic..... 342
Assaying in Three Parts.... 217
Assessments.....Weekly
Assessments by Mining Companies in 1888.... 42
Ass., American Iron and Steel.....77, 106
Ass., Coal Miners of Western Pa..... 551
Ass., American Social Science..... 548
Ass. for the Advancement of Science, the American.....571, 572
Ass. for the Advancement of Science, the British.... 481
Ass., Master Car-Builders'.... 594
Ass., Metal Roofers, Tin Plate and Sheet Iron Workers Journeymen... 146
Ass., National Stove Makers'..... 373
Ass. of Bessemer Steel.... 506
Ass. of Boiler Manufacturers. 283, 373, 376, 397
Ass of Caustic Soda Makers 176, 472, 490
Ass. of I. & S. Workers. 305, 373, 484, 527, 572
Ass. of Leather Belting Mfrers..... 461
Ass. of Mfrers of Iron and Steel 506
Ass. of Merchant Steel.... 506
Ass. of Stone Cutters and Quarrymen 516
Ass. of Western Iron Mfrers..... 506
Ass. of Wrought Iron, Tube and Boiler Pipe Mfrers.....439, 577
Ass., Western Nail Mfrers..... 548
Astor Alliance Mines Ltd., Colo..... 17
Astoria Mine, Cal 122, 283, 374, 462
Asturiana Mg Co., Zacatecas, Mex... 509
Atarijea Mine, Hidalgo, Mex..... 98
Atkins, Wm. Day.... 352
Atlanta Cons. Mg. Co., Nev..... 244

Atlanta Machine Works, Ga..... 594
Atlantic Mg. Co., Mich., 96, 147, 171, 242, 275, 331, 354
Atlantic White Lead Co.....487, 576
Atlas Mine, Ariz..... 440
Atlas Iron Mg. Co., Mich 284
Atomic Weight of Ruthenum..... 280
Aucaigne, E. F., and Bronze Casting. 543
Auction Sale of Stocks, 26, 58, 78, 100, 126, 149, 173, 196, 222, 244, 266, 310, 334, 356, 378, 400, 422, 443, 466, 487, 510, 531, 553, 575, 597
Aurora Mine, Mich.....124, 441, 533
Aurora Mine, Nicaragua, C. A..... 377
Aurora Mg. Claim, Utah 486
Aurora Nail Works..... 461
Austin Mfg. Co., Ill..... 71
*Austin Portable Rock Drilling Machine..... 207
Australia, American Goods in..... 136
Australia, American Paper Going to.. 327
Australia, First Discovery of Gold in. 570
Australia, Natural Gas in..... 435
Australia, Opening of the Hawkesbury Bridge at Sydney..... 569
Australia, Railroad Extension in..... 593
Australian Cross-Continent Railway.. 280
Australian Forest Preservation..... 364
Australian Mining News.. 125
Australian Prize for Threshing Mill.. 417
Australian Railway Returns..... 526
Australian Revenue Returns..... 141
Austrian Brick Paving Blocks..... 327
Austrian Petroleum Wells..... 526
Automatic Guns, the Maxim..... 594
Axe, How it is Made..... 112
Aztec, Mg. Co., N. Mex., 19, 193, 264, 331, 376

B

Babcock & Wilcox Co..... 305
Babcock & Whitcomb, N. Y..... 354
Bachman, F. E..... 418
Badger Mine, Ontario.....98, 243, 464
Bajio Mine, Sonora, Mex..... 442
Baker, Consul, on Argentine Finance. 364
Baker Mg. Co., Colo..... 219
Baker, W. S..... 528
Balakalla Mine, Cal..... 353
Bald Eagle Mg. Claim, Dak..... 485
Balderston, Wm..... 123
Baldwin, Augustus..... 596
Baldwin Locomotive Works, Pa.....16, 122
Bale, Fred, on the Recovery of Ammonia and Chlorine in the Ammonia Soda Process..... 160
Ball Electric Light Co., N. Y.....126, 352
Ball Engine Co., Pa..... 494
Ballou, Franklin..... 595
Baltimore & Ohio R. R. Co..... 266
Baltimore Coal Market 310, 554
Baltimore Copper Mg. Co., Lower Cal. 466
Baltimore Dry Dock Co..... 170
Baltimore G. & S. Mg. & Sm. Co., N.C. 265
Baltimore Mine, Colo..... 95, 549
Baltimore Mining Stocks.....Weekly
Baltimore Mining Stock Market in 1888..... 40
Baltimore Mining Stocks, 23, thereafter weekly
Baltimore United Oil Co..... 418
Banderita Mine, Cal..... 507
Bank of Persia..... 506
Banner Mine, Idaho..... 550
*Bar Channeler, the Saunders..... 347
Barcelona Mg. Co., Nev...147, 242, 307, 354, 355, 398
Barclay, John 354
Baring-Gould, Edw. S..... 352
Barker, Prof. Geo. F..... 527
Barnard, F. A. P. 418
Barnes, F. W..... 240
Barnhardt, P. D..... 549
Barnum, Wm. H..... 418
Barren Island Used for Discharging Vessels..... 461
Barrett, R. W..... 16
Bartlett, F. L 149, 253, 508
Bartlett, F. L., on the Future of Phosphates in the U. S. and Canada..... 253
Barrett, John S..... 288
Barton & George's Creek Valley Coal Co., Md..... 123
Bassick Mg. Co., Colo..... 306
Bassic Open-Hearth Steel..... 570
Bassic Process, Progress of the..... 191
Bates Refrigerator Co. vs. Edison Elec. Co..... 100
Bates Steel Co., Pa..... 484
Batopilas Cons. Mg. Co. Chihuahua, Mex..... 194
Batopilas District, Gold Mex. Discoveries in..... 5
Batres, Leopold..... 71
Battle Mountain Claims vs. Champion Claim, Colo..... 397
Battle Mountain Mg. Dist., Colo..... 549
Baubigney, H., On the Separation of Zinc and Nickel..... 482
Baubigney, H., On the Separation of Zinc and Cobalt..... 500
Baxter, C. O..... 52
Baxter Mine, Colo..... 95
Bay State Mines, Ariz..... 440
Beadleson, Mrs. Mary and Asbury Harpending.....220, 530
Beketon, N. N., On the Electric Extraction of Sodium and Chlorine.... 61
Beam Combination..... 56, 77
Bear Creek Oil Refinery, Pa..... 551
Bear Gulch Mg. Co., Idaho..... 331
Bear's Nest Mines, Alaska..... 373
Beaver Mine, Ontario.....98, 243, 464
Becher, Harry M..... 329
Becker, M. J..... 71
Beckett, Samuel A..... 71
Beddoe, W. A..... 122
Beech Creek R. R. Co., Pa.....197, 222, 245
Belcher Mg. Co., Nev., 82, 148, 173, 266, 356, 463, 465, 552
Belden Mine, Colo..... .....17, 95, 549
Belfast Mill, Ironton, O..... 594
Belgian Water Purification by Iron.. 14
Belgian Zinc Industry..... 459
Belgium, Poetsch System of Shaft Sinking in..... 412
Bellefonte Nail Works, Pa..... 263
Belle Isle Mg. Co., Nev., 173, 466, 355. 356, 465, 552
Belleville Brownstone for Building Purposes..... 228
Belmont Nail Co., W. Va..... 396
Belvidere Iron Mines, N. J..... 242
Ben Butler Mg. Co., Colo. 17, 171
*Benardos Electrical Welding Process 13
Benedict, W. de la..... 72
Ben Harrison Mine, Wis..... 148
Benton Cons. Mg. Co., Nev., 73, 82, 173, 193, 266, 307, 331, 356, 465, 552
Berlin Exhibition of Mining Devices.. 302
Berwind, Edward J..... 146
Bessemer & Huerfano Irrigating Canal at Pueblo, Colo..... 264
Bessemer Cons. Iron Co., Mich., 354, 421, 550
Bessemer Steel Assn. Disbanded..... 506
Bessemer Steel Co., Lt..... 246
Bessemer S. & I. Co., Ala..... 548
Best & Belcher Mg. Co., Nev., 82, 173, 242, 266, 356, 376, 463, 465, 486, 552
Beta Mine, Colo..... 284
Beta Mg. Claim, Dak..... 485
Bethlehem Iron Co., Pa., 94, 106, 146, 170, 192, 330, 511, 527, 548
Bewick, Mr 173
Bickmann on Transportation of Sulphuric Acid..... 593
Big Bear Mine, Ontario.....243, 464
Big Bend Hydraulic Co., Dak 50
Big Indian Mine, Nev 596
Big Missouri Mine, Dak..... 595
Bi-Metallic Mg. Co., Mont., 73, 193, 219, 331, 375, 485, 529
Birmingham Fur. & Mfg, Co., Ala.... 352
Birmingham Mg. & Mfg. Co., Ala..... 49
Birmingham Mining Stocks.....Weekly
Birmingham Mining Stock Market in 1888..... 41
Birmingham, Sheffield & Tennessee River Railway, Ala..... 373
Birkbeck, Thos. B..... 527
Bischof, Prof., on Water Purification by Iron..... 14
Bishop, Fred..... 170
Bismuth, Native, Deposit of in Chihuahua, Mex..... 286
Bituminous Coal for Export..... 487
Bituminous Coal Trade, Iron-clad Agreement..... 278
Bituminous Prices in 1888 at Buffalo.. 127
Bituminous Trade, Organization of a New Combination..... 53
Bildt, C. W..... 373
Bildt Process..... 396
Billings, Fred..... 124
Bituminous Coal Trade Review..Weekly
Black Diamond, Enterprise of..... 487
Black Diamond Tile Works, Pa..... 218
Black Hills Canal & Water Co., Dak. 241
Black Hills Marble & Mg. Co., Dak.. 123
Black Hills Tin Mg. Co., Dak..... 96
Black Oak Mg. Co., N. Mex..... 287
Black Snow..... 348
Black Spar Mg. Co., Idaho..... 306
Black Wonder Mine, Cal..... 528
Blackwood, Pa., Coal Operations at.. 508
Bladon, Francis Joseph..... 439
Blair Oil & Mg. Co., Wyoming..... 574
Blake, Prof. W. P. 85, 375
Blake Triple Compound Condensing Pump..... 418
Blake Multiple Jaw Crusher..... 181
Blake, W. B., Silver King Mine, Ariz. 85
Blakely, S. W..... 309, 551
Blandy, John F..... 594
Blast, a Large, in Scotland..... 65
*Blasting Snow..... 212
Blauvelt, C. I.....134, 139, 574, 585
Blauvelt, H., on Arizona Mining Interests..... 134
Blauvelt, H., on the Reymert Manganiferous Lode, Ariz., and its Formation..... 139
Blauvelt, Harrington, on Great Eastern Mg. Co. of Arizona..... 585
Blazing Star Mine, Cal..... 528
Bleaching Powder, Process of Producing Direct from Natural Brine by Means of Electricity..... 600
Bleaching Process, the Hermite Electrolytic..... 328
Bleak House Mine, Colo.....17, 171
Bleichert Tramway, Erection of at Pitkin, Colo..... 373
Blewitt, Mine Inspector, Pa..... 19
Blocks for Paving in Austria..... 327
Blue Bird Mine, Colo..... 397
Blue Bird Mine, Dak..... 306
Blue Bird Mg. Co., Mont..... 97
Blue-eyed Nellie Mine, Mont..... 73
Boats, Speed of Torpedo..... 115
Bob Ingersoll Mine, Dak..... 375
Bocaneme G. & S. Mg. Co., Rep. of Cal. 221, 307, 551
Bodie Cons. Mg. Co. Cal., 82, 123, 173, 266, 356, 465, 531, 552
Bogart, John 71
Bogota Elec. Light Co., N. Y..... 146
Boiler Pipe & Wrought Iron Tube Mfrers. Assn..... 439, 577
Boiler Manufacturers, Assn. of, 283, 373, 376, 397
Boiler Plate, Testing..... 215
Bolaños Mine, Jalisco, Mex... 98, 332, 421
Bolckow, Vaughan & Co., Large Steel Shears 365
Boleo Mg. Co.. Lower Cal., Mex..... 243
Bolivia Customs, Tariff of..... 16
Bolivia S. Co., Lt., Bolivia 173
Bomberger, H. C..... 122
Bonanza Mine, Cal..... 17
Bonanza Mg. & Red. Co., Mont..... 573
Bond, L. V..... 418
Bonnybel-Durant Litigation, Colo.... 171
Bonnybel Mine, Colo.....171, 241, 549
Booker Con. Mg. Co., Nev..... 82
Books Received, 48, 66, 121, 141, 191, 217, 237, 280, 302, 328, 348, 395, 436, 483, 526, 547, 571, 593
Boom in Stocks of Ruby Mines Co., India..... 222
Booth Bros. & Hurricane Granite Co., Combination 94, 170
Boots, Wire Sales for..... 327
Borax Industry of Cal..... 146
Boreel Mg. Co., Colo.....219, 353
Bore Hole, Transmission of Power through a..... 348
Boss Lode & Fuller Placer Mg. Co., Colo..... 508
Boss Sulphur Mine, Utah 398
Boss System of Milling Operated in Mex..... 332
Boston & Colo. Sm. Co., Colo., 50, 397, 528
Boston & Montana Cons. C. & S. Mg. Co., Mont., 18, 147, 244, 264, 265, 310, 356, 375, 378, 529, 531, 575
Boston Coal Trade Review.....Weekly
Boston Mine, Colo 95, 462
Boston Mine, Pa..... 331
Boston Mining Stocks.....Weekly
Boston Mining Stock Quotations in 1888..... 40, 46
Boulder County, Colo., Mining Industry of..... 462
Boulle, on a Compressed Air Sand Dredge..... 417, 483
*Boulton Apparatus for Compressing Steel..... 456
Boundary Line Between Alaska and Brit. Col..... 17
Bourn, W. B..... 305
Bourne Mine, Wis..... 148
Boutelle, Representative..... 71
Bowden, J. W., Weight Anthracite... 496
Bowers, W. H. H..... 10, 218
Bowie, Augustus J..... 71, 527
Boys, C. V., on Quartz as an Insulator..... 435
Brackett, Prof. C. F., on Heroult Process..... 387
Bradstreet, A. G..... 171
Bradstreet's *Kuhlow's* Copy of the E. & M. J..... 329
Brainerd, A. F..... 283
Braintree Dam, Mass..... 13
Braive, Emile..... 418
Brake, Automatic Electric, Tests of.. 71
Brake, An Electric Railroad..... 205
*Brandis Improved Engineers' Level. 322
Branner, John C.....274, 341
Bratnober, Henry..... 443
Braun, Frederick..... 373
Bray, Thos..... 572
Brazil Block Coal Co..... 96
Brazil, S. A., Mining News..... 195
Brazil, S. A., Using Native Coal 495
Brazilian Diamond Exports..... 195
Breckenbridge Mill Co., Colo..... 72
Breckon, T. W. Page..... 170
Bremen Mill, U. M..... 376
Brent, Chas.....98, 243
Brereton, R. M..... 439
Bressa Prize of $2,400..... 140
Brewer Mg. Co., S. C..... 97
Brewster, J. B.....16, 17
Brewster's Centrifugal Amalgamator, Tests of, at Homestake Mg. Co., Dak..... 17
Brick Kilns, Historical..... 526
Brick Paving Blocks..... 327
Bridge, A Submarine..... 571
Bridge at Cincinnati, A New Railroad. 66
*Bridge, Poughkeepsie Cantilever.... 116
Brief History of Patent Legislation in the U. S...... 302
Brierfield C. & I. Co., Ala..... 218
Brimstone, Imports of..... 450
*Brimstone, Statistics of Sicilian..... 279
Brimstone Sulphur Mine, Utah..... 308
Brine and Gas Well, Combined Fresh Water..... 11
Bristol G. & S. Mg. Co., Conn 147
Bristow, B. A..... 150
British Ass. for the Advancement of Science..... 480
Brit. Col. and Alaska, Boundary Line 17
Brit. Col., Annual Report of Minister of Mines..... 376
Brit. Col., Coal Deposits of..... 220
Brit. Col., Magnetic Iron Ore Mines.. 309
Brit. Col. Coal Production..... 377
Brit. Col. Mining News, 74, 220, 309, 376, 377, 530
British Guinea Pig, The 3
British Shipping Trade..... 251
British Statistics of Copper and Tin from Customs Returns..... 101
Broddock Wire Mill Co., Pa..... 396
Broad, Josiah..... 354
Broad Ripple Natural Gas Co., Ind... 397
Broadwater Group of Mines, Mont... 550
Brockville Chemical & Superphosphate Co., Ontario 572
Broken Hills Proprietary Co., New South Wales..... 420
Bronze Bust of Alex. S. Holley..... 583
Bronze, Malleable 435
Bronze Panel, Casting of a..... 543
Brook-Snyder Mill, Colo..... 353
Brooke Iron Co., Pa., 170, 218, 352, 373, 376, 420, 484, 548
Brookes, James, on South American Electric Gold Extracting Process... 121
Brooklyn Institute, Mineralogical Section of 373
Brooklyn Institute, The 373, 374
Brooks, W. P. & Sons, Ohio, Assignment of..... 551
Brookwater, J. W., and the Brookwater Process..... 240
Brophy Mg. Co., Nev..... 244
Brotherhood of Locomotive Engineers 594
Brotherhood of United Labor..... 572
Brown Bear Mine, Cal..... 353
Brown, Bonnell & Co..... 330
Brown, E. C..... 439
Brown, F. G..... 355
*Brown's Hoisting & Conveying Plant..... 8
Brown, Prof J. Roy..... 377
Browne, Douglas L. V..... 420
Brownstone, Decrease in Use of, for Building Material..... 202
Bruback, Theo..... 52
Brugman, W. F., on the Estimation of Copper by Potassic Cyanide..... 459
Brunswick Gold Mg. Co., Cal.....95, 172
Brunswick Mill, Nev..... 463
Brush, Chas. B 71
Brush Elec. Co..... 285
Brush Elec. Light Co., Mo., Consolidation of..... 49
*Buchanan Magnetic Ore Separator, 542, 563, 585
Buckeye Pipe Line Co , Ohio 78, 100
Buckhorn Mine, Colo.... ..... 241, 353
Buckeye Mg & Mill. Co., Mont..... 354
Buena Vista Iron Mines, Va..... 71
Buena Vista Mg. Claims, Dak..... 485
Buffalo Chemical Works..... 196
Buffalo Coal Trade.....Weekly
Buffalo Domestic Consumption..... 127
Buffalo, Rochester & Pittsburg Co... 127
Buffalo Shipping Docks and Coal Pockets..... 127
Buffalo Zinc & Copper Co., Ark., 484, 507
Builders, the Nat'l Ass. of..... 176
Building Exchanges in the U. S..... 176
Building Material and the Mechanics' and Traders' Exchanges, Consolidation of..... 272
Building Material Market Review, Weekly.
Building Material, Prices of.....Weekly
Building Trades, Exchanges Connected with..... 176
"Bull Dogs" for Standard Oil Co..... 583
Bullion Beck Mine, Utah..... 420
Bullion, Gold and Silver Deposits at Denver Mint, Colo..... 72
Bullion Mg. Co., Nev., 82, 173, 266, 356, 398, 465, 486, 550, 552
Bullion Production of the Comstock Mines, Nev.....51, 193
Bullion Production of Nev. in 1888.... 51
Bullion Rates, Railroad Convention in Reference to..... 488
Bullock, Chas., on Preparation and Properties of Metallic Manganese.. 593
Bullock, M. C., on the Value of the E. & M. J..... 160
Bullock, M. C., Mfg. Co., Ill..... 16
Bulmer, W..... 354
Bulwer Cons. Mg. Co., Cal., 82, 146, 173, 266, 350, 355, 374, 396, 465, 507, 552
Bunker Hill Gold Mg. Co., Cal., 122, 283, 374, 462
Bunker Hill Mine, Idaho.....96, 440
Buoys, Electric Lighted..... 390
Burch Lead and Zinc Mg. Co., Mo.... 375
Burchell, H. C..... 418
Burden, Howard..... 240
Burden Iron Co., N. Y..... 71
Burdick, Francis M..... 71
Burfiend, J. H. on Lixiviation of Argentiferous Blende and Galena Ore. 498
Burger, Charles..... 506
Burke, Judge, and the Hocking Valley R. R. and Hocking Valley Coal and R. R. Co..... 508
Burmah, Silver and Lead Mining in.. 326
Burmah, Forest Preservation in..... 364
Burmese India Rubber..... 216
Burmese Iron Ore..... 191
Burmese Ruby Mines.....215, 572
Burner for Using Crude Oil..... 94
Bureau of Labor Industrial Statistics 141
Burrell Gold Mg. Co., Colo.....95, 219, 305
Burt, Wellington R.....506, 582
Bushwick Chemical Works, N. Y..... 122
Butler Coal Co., Pa..... 53, 193, 331
Butler, Judge Wm..... 71
Butte & Ahart Mg. & M. Co., Colo.. 96
Butte & Boston Mg. Co., Mont..... 248
Butte Ore Millg. Works, Cal..... 353
Butte Valley Mg. Co., Cal..... 462
Buttercup Mine, Idaho..... 306
Buxton Mg. Co., Dak.....50, 513, 595
Byers, William..... 418

C

Cabezon Mine, Zacatecas, Mex..... 509
Cable, A New Mexican..... 216
Cacachilas Concession, Lower Cal., Mex..... 464
Cacachilas Dist. G. & S. Mg. Co., Coahuila, Mex.....464
Cadmium from Zinc, Electrolytic Separation of..... 570
Cahoon, J. B., On the Wiswell Amalgamation Process..... 4
Calaveras Cons. G. Mg. Co., Lt., Cal., 192, 284, 528
Calaveras Co., Cal., Mining Developments of..... 528
Caledonia Coal Co., Pa..... 73
Caledonia Gold Mg. Co., Dak...82, 123, 147, 171, 219, 266, 284, 356, 374, 440, 463,
Caledonia Iron Mg. Co., Mich..... 96
Caledonia Mine, Wis..... 398
465, 552, 570, 573
Caledonia Mg. Co., Nev..... 285
California and its Gold Industry. 343
California and the Débris Question, 66, 84, 118, 157
California Belcher Mine, Utah..... 420
California, Danger Buying Mines in.. 528
California Importation of Houses..... 14
California Law Regulating Use of Water in Placer Mining..... 66
California Mining News, 17, 72, 95, 122, 146, 171, 192, 218, 283, 305, 330, 353, 374, 396, 440, 462, 484, 507, 528, 548, 573, 595
California Mine Co., Ltd., Colo..... 397
California, Platinum in..... 273
Calliope Mines, Colo..... 440
Callison Mine, Nev..... 508
Calumet & Hecla Mg. Co., Mich., 20, 96, 147, 171, 222, 242, 267, 306, 354, 356, 396, 419, 443, 452, 486, 550, 595
Calumet & Hecla Mg. Co., Change of Management..... 396
Calumet & Hecla, the Cost of Copper at 452
Camas No. 2 Mine, Idaho..... 550
*Cambria Iron Co., Pa.....106, *520, 572
Cameron C. & I. Co., Pa.....19, 599
Cameron, J. Macdonald..... 192

Cameron, John 122
Camille G. Mg. Co., Ga 51, 353, 375
Campaign Mine, Dak 375
Camus Mine, Idaho 463
Canada, Edison Incandescent Lighting Patent Void in 237
Canada, Future of Phosphates in the U. S. and in 181
Canada Mining News, 74, 98, 194, 220, 243, 265, 285, 377, 398, 464, 486, 509, 530, 551
Canada, Mineral Production in 1888 453
Canadian Apatite Deposits 194
Canadian Chemicals, Proposed Protection Against 290
Canadian Copper Co., Ont 52, 220
Canadian Debt 453
Canadian Locomotive Works, Ont 16
Canadian Pacific R. R. 212, 245, 486, 548
*Canadian Pacific Railway Snow Sneds 212
Canadian Phosphate Co., Ltd., Can 406
Canal, A Current 370
Canal, Chesapeake & Ohio 583
Canal Construction Co., Nicaragua 593
Canal of the Isthmus of Corinth 48
Canal Scheme, the Michigan Ship 280
*Canal, the Nicaragua 133, 181, 305, *414, 439, 484, 506
Canal Improvement Bill Passed in Senate, N. Y 467
Canal, the Panama 133, 419
Canal Traffic, the Suez 368
Canals of Mars 395
Candelaria Mine, Durango, Mex 420
Canal Works in Egypt 571
Candelaria Water & Mill. Co., Nev 508
Candler, Thos. E., on Copper Statistics 61
Canoas Mine, Lower Cal., Mex 464
Canton Mine Mg. Co., Chihuahua, Mex 332
Canton Steel Works, Ohio 49
Carbon Dioxide Gas Springs in Yellowstone Park 344
Carbon Iron Co., R. I 376
Carbonate Mine, Mont 573
Carbonic Acid, Dissociation of 184
Car Builders' Assn 594
*Carey's Portable Mills 119
Caribou Mg. Co., Colo 95, 171
Carlisle G. Mg. Co., N. Mex 331, 486
Carlton Borax Co., Cal 146
Carmen Mine, Michoacan, Mex 286
Carnegie, Andrew 439, 461, 495
Carnegie Bros. & Co., Ltd., Pa., 106, 506, 572
Carnegie on Trusts 495
Carnegie, Phipps & Co., Pa 240, 484
Carnot, Adolph, on Use of Hydrogen Peroxide for Determining Chrome, Manganese and Iron 141
Caroline Mg. Claim, Dak 485
Carp Furnace, Mich 170
Carpenter, Prof, on Reduction of Tin Ores 527
Carracedo Mine, Spain 509
Car Springs of Cork 216
Cars for Pennsylvania R. R 121
Cars, Steel Passenger Railroad 12
*Cars, Stephenson Street 410
Carstairs Electric Railway, Scotland. 481
Carthage L. & Z. Co., Mo 244
Cartersville S. & Furnace Co, Ga ..71, 283
Cartwright L. & S. Co., Ohio 192
Carupano Mg. Co., Venezuela 530
Casa Grande Mine, Ariz 594
Cashier Mg. Co., Colo., 123, 125, 171, 462, 465, 531
Caska William Colliery, Pa 464
Cassiterite Mine, Dak 375
Castner & Curran Working Up Export Bituminous Trade 487
Cast Steel Gun 122, 146
Castle Chief Mg. Co., Dak 50
Castle Mg. Claim, Colo 241
Castle Rock Coal Co., Ga 50
Castle View Mine, Colo 397
Castor vs. Olive Oil for Lubrication. 302
Casualidad Mine, Zacatecas, Mex. 194, 464
Catalpa Mg. Co., Colo 171
Caustic Soda Makers' Assn 176, 472, 490
Caustic Soda Makers, Restriction of Output 176
Caustic Soda, Prices of 512
Caustic Soda Solutions as Transmitters of Heat 394
Cave, A Swiss 280
Cave Dwellers in Mex 526
Cazin, F. M. F 329
Cedros Mine, Guanojuato, Mex 52
Celeste Mine, Colo 397, 507
Celestial Extension Mine, Colo 95, 462
Cement and Mortar, Permeability of .. 393
Cement, Imports of 272
Cements, Natural 546
Cement, Proposals for 17
Cement Works at Yankton, Dak 595
Census Machine, Electrical 483
Census Report on Vital Statistics 561
Census, the Eleventh 253, 319, 363
Centennial, Anthracite-Iron 134
Centennial Mine, Mich 147, 331
Center Creek Mg. Co., Mo 307
*Centrifugal Pumps for Irrigation 88
Central American Mining News, 74, 220, 243, 509, 530, 574, 596
Central Arizona Mg. Co., Ariz 574
Central Dock and Terminal R. R. Co., N. Y 197, 245, 598
Central Mg. Co., Mich 147, 171, 242, 354
Central S. Co., Ariz 594
Centrifugal Amalgamator, Brewster's Tests of, at Homestake Mg. Co., Dak 17
Cerrillos Mine, N. Mex 97
*Cercle Chromatique 593
Chalk Creek Coal R. R 464
Challenge, A Rock Drill 298
Challenge Mg. Co., Nev., 73, 82, 97, 172 173, 193, 220, 266, 356, 463, 465, 552
Chamberlain, Benj. R 218
Chamberlin Bell Mine, Idaho 96
Chambers, Jas. A 73
Chambers, W. L 240
Champion Claim and the Battle Mountain Claim, Colo 397
Champion Combination Mg. Co 244
Champion Cons. Mg. Co., Mon 73, 242
Champion Mine, Colo 171
Chanler, Mrs. Amelia Rives 94
*Channeler, the Saunders Bar 347
*Channeling and Quarrying Machine, Wardwell 500
Chapin Iron Mine, Mich., 9, 146, 171, 331, 508, 517
Chapin Mg. Co., Mich., Using Poetsch System 517
Chapin Mine, Mich.; Compressed Air Plant 9
Charleston Mg. & Mfg. Co., S. C ..125, 334
Chartiers Natural Gas Co., Pa., 58, 82, 242, 264, 441
Chase, W. G., on Eng. and Mg. Jl. as an Advertising Medium 319
Chatfield, Norman 462
Chatham Dockyard Crane, the Largest in the World 392
Chattanooga Foundry & Pipe Co., Tenn 49
Chattanooga I. Co., Tenn 50
Chattanooga Land, C. I. & R. Co., Tenn 220
Chattanooga Marble & Stone Co., Tenn 516
Chattanooga Mg. & Mfg. Co., Ga 595
Cheever G. & S. Mg. Co., Colo 353
Cheever's Quantitative Analysis, Review of 182
Chemical Physics, Spectroscopy in 395
Chemical Society, The American 517
Chemical Terms, Pronunciation of 571
Chemicals and Minerals ..... Weekly
Chemicals, Fertilizing Duty on 512
Chemicals, Imports of 272
Chemicals, Prices of ..... Weekly
Chesapeake & Ohio Canal 527, 572, 583
Cheshire Mine, Mich 375
Chesterfield C. & I. Mg. Co., Va 376
*Chevreul, Michel Eugene 365
Chiapas, Mex., Mining News ..194, 213, 420
Chicago & New York Fire Statistics .. 593
Chicago Copper Ref'g Co 71
Chicago Spiegel Making 121
Chicago, Manufacture Tin Plate in ... 451
Chicago Vegetable Boiler Compound Mfg. Co., Ill 330
Chicago, Wilmington & Vermillion Coal Co., Ill 508
Chicago Iron Works, Ill 240
Chief Deposit Co., Colo 507
Chignecto Marine R. R 342
Chihuahua, Mex., Mining News, 19, 98, 125, 194, 286, 309, 332, 420, 441
Child Labor, Prize for Best American Essay on 94
Chili Mining New 442, 551
Chili, the Republic of 451
Chilian Finance 66
Chilian Nitrate Industry 107, 451, 569
Chilian Trade 14
Chimney Repairer, Feats of a 505
China, Agricultural Implements for .. 217
China, Cotton Mills in 431
China, Iron Foundries in 320
China, the Consumption of Opium in 460
China, the Electric Light in 260
Chinese Engineers 570
Chinese Mint Converted into a Cloth Factory 460
Chinese Port, A New 14
Chinese Railways 260, 418, 483
Chinese Silver Mines 86
Chinese vs. Japanese as Miners and Machinists 363
Chism, R. E., on Foreign Investments in Mexico 564
Chism, R. E., on Mexican Mining Law 184
Chisolm, F. F 242
Chloride Fraction Mine, Idaho 96
Chlorine, Recovery of, in the Ammonia Soda Process 160
Chlorination Plant, Erection of, at Garden City, Dak 375
Chollar Mg Co., Nev., 18, 73, 82, 97, 173, 193, 220, 266, 285, 307, 356, 398, 463, 465, 486, 552
Christ, George 19
Christy Mg Co., Utah 244, 308
Christy, S. B., Theories of the Quicksilver Deposits at New Ulmaden .. 10
Chrome Determined by Hydrogen Peroxide 141
Chrome Iron, Olsen Process of Manufacture 483
Chrome Iron Ore as a Furnace Lining 394, 439
Church, Col. Wm. C 352
Church Hill Mine, Ind 96
Churchill, Prof 574
Chrysolite Mg Co., Colo 95, 485
Cincinnati Corrugating Co., O 71
Cincinnati Railroad Bridge 66
Cinco Senores Mines, Michoacan, Mex 19, 98
Cinco Senores Mg. Co., Zacatecas, Mex 574
Cinnabar Deposits, Mex 243
*Cinnabar Fines at Almaden, Spain, Furnace for 544
Cipher Code, Lieber's Universal Telegraphic 94
Circle & Woodson Co., Va 551
Circular Saws, How They Are Made. 15
Citizen's O. & G. Co., Pa 19
City of Paris, Great Ocean Record 446
City of Paris & City of New York, (Ocean Racers) 429
City of Teheran Water Works Co 506
Civil Engineers, Amer. Soc. 71, 461, 517, 584
Civil Engineers, Institution of, Mining Section, Establishment of in England 305
Civil Engineers, Institution, Annual Meeting 302, 572
Clark, Charles 572
Clark, F. M 484
Clark's, Alvan G., 40-inch Telescope .. 505
Clarke, Eliot C 71
Claus, Herr, on Railroad Gauges 15
*Claus Sulphur Kiln 118
Clays, Imports of 272
Clayton Air Compressor Wks., N. Y .. 572
Clearfield Bituminous Coal Co., Pa., 97, 148
Clearfield Cons. Coal Co., Pa., 220, 264, 331
Clergue, Frank 506
Cleopatra Mine, Colo 171
Cleveland & Anchor Lode Mg. Co., Idaho 550
Cleveland Iron Market, 380, 402, 445, 489, 511, 577
Cleveland Iron Mg. Co., Mich 147, 573
Cleveland Tin Mg. Co., Dak 96
Cleveland Roll. Mill Co., Ohio 106
Cliff Dwellers in N. Mex 138
Cliff Mine, Mich 73
Cliff Mg. Co., Nev 18
Climax Mg. Co., Mont 529
Clinton Mine, Colo 171
Clipper Mg. Co., Cal 353
Cloth of Wood 215
Cloud, H. H 123
Cluss, Adolph, on Natural Cements ... 547
*Clydebank Works, Scotland, 120-ton Sheerlegs at 138
Coahuila Coal Co, Mex 104
Coahuila, Mex., Appointment of a State Mg. Engineer 19
Coahuila, Mex., Mining News, 19, 98, 194, 243, 332, 420
Coal, Advance in Price in N. Y 598
Coal, Alabama Shipments to the West Indies 122
Coal and Coke Freight Rates 467
Coal and Coal Mining in Ill 477
Coal and Iron Industries of Ala. in 1888 47
Coal and Limestone, Inorganic Origin 183
Coal and Railroad Stocks in 1888 38
Coal, Anthracite, Discovery of in Crow Creek Reservation, Dak 17
Coal at Volin's Siding, Dak 123
Coal, Brazil Requires Railroad Companies to Use Native 195
Coal Dock, the Largest in America ... 5
Coal Contract of Grand Trunk R.R. 197
Coal Contract of Public Works, Philadelphia 100
Coal, Deposits of Anthracite in Sonora, Mex 464
Coal Deposits, Vancouver, Brit. Col. 220
Coal, Drilling for in Texas Hollow, Ohio 596
Coal Fields, Duration of the British .. 302
Coal Freights ..... Weekly
Coal Freight Rate in Iowa 423
Coal Found near Deloraine, Prov. of Manitoba 74
Coal Lands, Development of in Cambria Co., Pa 148
Coal Market Reviews ..... Weekly
Coal Mine Inspection in Pa 285
Coal Miners' Assn. of Western Pa ... 551
Coal Miners Sent from Pittsburg, Pa., to Seattle, Wash. Terr 148
Coal Miners', Ill., Wages, 419, 463, 485, 508, 529
Coal Miners, Indiana, Wages of, 96, 146, 263, 306, 440, 595
Coal Miners' Strike, Tenn 354
Coal Miners' Wages in Colo 440
Coal Miners' Wages, Iowa 96
Coal Miners' Wages, Ohio 420
Coal Miners' Wages in Pa., 97, 124, 149, 205, 242, 283, 331, 373, 420, 530, 546
Coal Miners' Wages at West Superior, Wis 418
Coal Mines of Argentine Republic ... 125
Coal Mines of Chihuahua, Mex 125, 286
Coal Mines of Coahuila, Mex 194, 332
Coal Mines of Colorado 123
Coal Mines of Dakota 219
Coal Mines of Fresno Co., Cal 146
Coal Mines of Illinois 171
Coal Mines of India 543
Coal Mines of Indiana 96
Coal Mines of Jalisco, Mex 243
Coal Mines of Oregon 97
Coal Mines of Rhode Island 148, 376
Coal Mines of Texas 441
Coal Mines of Virginia 64, 85, 134, 172
Coal Mines of Wash. Terr 194, 308
Coal Mines of West Va 148, 354
Coal Mining in Alabama in 1888 188
Coal Mining Machines, Electric 548
*Coal Mining Machine, Ingersoll-Sergeant 120
Coal Mining Statistics of Great Britain for 1888 387
Coal near Shawmut, Pa 242, 285, 288
Coal Operators to Pay Miners for all Coal Mined 148
Coal Palace at Trinidad, Colo., Building of 192
Coal Prices of, in Baltimore, Md ..310, 554
Coal Production in 1888 20
Coal, Production of Anthracite, 75, 197, 288, 400, 422, 487, 598
Coal Production of Brit. Col 377
Coal Production of Colorado 17, 171
Coal Production of Germany 526
Coal Production of Illinois 550
Coal Production of Iowa 18
Coal Production of Kentucky 237
Coal Production of New Mex 242
Coal Production of Ohio 441
Coal Production of Tennessee 172
Coal Production of the U. S. in 1888, 28, 251, 259
Coal Production of Utah 51
Coal Production of Wash. Terr 308
Coal Production of Wyoming 52
Coal Receipts at Boston in 1888 126
Coal Shipments by Ohio River from Pittsburg for Six Years 58
Coal Stocks, Fluctuations of, in N. Y. in 1888 45
Coal Stocks, N. Y ..... Weekly
Coal Syndicate in England 285
Coal, the Largest Lump Ever Shipped from Ill 123
Coal Trade Combination at Denver, Colo 484
Coal Trade Combination, the Sea Board 278
Coal Trade Review, Boston, Buffalo, New York, Pittsburg ..... Weekly
Coal Trade, the Anthracite ..... Weekly
Coal Trade, the Bituminous ..... Weekly
Coal Trade, the Moral Standard in ... 148
Coal Trust on the Monongahela 148
Coal, Western Sale Agents, Meeting 334
Coates Mine, Dak 375
Cobalt and Nickel Decomposition .. 87, 183, 301
Cobalt and Nickel not Decomposed ... 183
Cobalt and Zinc, Separation of 500
Cobbler Mine, Colo 50
Cochran, Thomas 461
Coe Mine, Cal 573
Cœur d'Alene District, Idaho 96, 306
Coffee, Artificial 327
Cogar, Richard 353
Coggin, F. G 595
Coggswell, W. B 133
Coghlan, John, on Natural Gas in Australia 435
Cohen, Hermann 172, 195
Coin, Foreign and Domestic, Quotations of, 423, 445, 467, 488, 511, 532, 554, 576, 599
Coinage of Mexican Mints 94, 195, 509
Coins, The Issue of Minor 280
Coke and Coal Freight Rates 100, 467
Coke Co., of Connellsville, Pa 331
Coke Concrete 215
Coke, Henry 595
Coke Imports of San Francisco 308
Coke Industry of Wash. Terr 308
Coke Making in Utah 441
Coke Ovens, Erection, San Felipe, Mex 194
Coke Ovens, Movable Bottom for 216
Coke Prices and Transportation Rates, Connellsville, Pa 100
Coke Workers' Wages, Pa .. 19, 97, 191, 331, 354, 357
Colburn, C. H 548
Colby, Chas. L 94
Colby Mine, Mich 146, 284
Colchis Mg. Co., N. Mex 19, 463
Coleman Borax Works, Cal 146
Coleman, G., Mg. Co., Colo 353
Collins Brothers, Iowa 18
Collins, Henry F 220
Collins, J. H 220
Colombia, Import Duties in 417
Colombia, Rep. of, Railroads in 482
Colombia, Rep. of, Field for American Enterprise 461
Colombia, Rep. of, Mining News, 195, 221, 243, 309, 332, 377, 442, 465, 509, 551, 596
Colombia, Rep. of, Wants Emigrants 506
Colonel Sellers Mine, Colo 462
Colorado C. & I. Co., Colo .. 123, 171, 264, 330
Colorado Central Mine, Colo 219
Colorado Coal Miners, Wages of 440
Colorado Coke Co, Colo 330
Colorado, Economical Mining in 416
Colorado Fuel Co, Colo 219
Colo G. & S. Extraction Co. Ltd. (Newbury-Vautin Patents), Colo .. 374
Colorado, Meeting of the Amer. Institute of Mg. Engineers 584
Colorado Mine, Sonora, Mex 98, 332
Colorado Mining News, 17, 72, 95, 123, 146, 171, 192, 219, 240, 263, 284, 305, 330, 353, 374, 397, 419, 440, 462, 484, 507, 528, 549, 573, 595
Colorado Mining Stock Exchange, Denver 528, 595
Colorado Smelters, Production, 1888 .. 50
Colorado Sm. Co., Colo 50
Colorado Water, The Purification of .. 330
Colorimetric Estimation of Manganese 460
Columbia College, N. Y 49, 506, 594
Columbia College School of Mines, Electrical Course at 506, 594
Columbia College, School of Mines, Summer School at Litchfield, Conn. 594
Columbia Iron Co., Pa 170, 305, 352
Columbia Mine, Colo 95, 549
Columbia Mine, Nev 51
Columbus Mg. Co., Idaho 331
Columbus Cons. Mg. Co., Nev 574
Columbia Iron Co., Pa 330
Combinations and Trusts, Organized, Conducted 452
Combination, Anthracite, and the Quotas of the Companies 288
Combination, Beam 86
Combination Coal Deal Dealers at Denver, Colo 484
Combination Cream of Tartar Mfrs 21
Combination, Organization of a New, in Bituminous Trade 53
Combination of Sewer Pipe Manufacturers 94, 146
Combination, State Exchange, Pa 102
Combustion in Locomotive Fire-Boxes 121
Comet Mg. & Sm. Co., Utah 52, 124, 285
Comet Mine, Mont 508
Commerce Act, the Inter-state 391
Commonwealth Mg. Co., Nev., 73, 82, 147, 266, 356, 375, 441, 463, 465, 529, 550, 552
Communication between Argentine and Chilian R. R 551
Compound Armor vs. Steel Plates 216
Compressed Air in Dredging 483
Compressed Air Sand Dredge 417
Compressed Air System, the Popp 458
*Compressors, Sectional Air, Rand ... 388
*Compressors, Ingersoll-Sergeant, 432, *504
Compromise Mine, Cal 507
Compromise Mg. Co., Colo 374, 549
Comptoir d'Escompte, 245, 267, 295, 311, 379, 397, 419, 465, 467, 479
Comstock, Dr. Theo. B., on Illinois Coal Mining 477
Comstock, Dr. Theo. B., on Lixiviation of Silver Ores 482
Comstock Lode, Nev., Exploring Ground, West of Present Workings 376
*Comstock Lode, Electric Transmission at *321, *498
Comstock Mg. Companies, Nev., Pay Rolls of 550
Comstock Mg. Companies, Nev., Production of 51, 193, 463
Comstock, Prof. Thos. B., and the Geological Survey of Arkansas 271

Comstock Silver Mg. Co., Utah..... 52
Con. New York Mg. Co., Nev., 82, 173, 236, 356, 465, 552
*Concentrating Mill, the San Antonio De Yguana, Mex..... 324
*Concentrating Works of the St. Joseph Lead Co., Mo..... 566, 588
Concentrating Works, Park City, Utah..... 376
Concepcion Mine, Michoacan, Mex... 98
Concepcion Mine, San Luis Potosi, Mex..... 194
Concepcion Mg. Co., Tlalpujahua, Mex..... 464, 530
Concordia Mine, Hond..... 420
Concrete Made of Coke..... 215
*Condenser, the Worthington Independent..... 209
Cone, Chas. D. on Value of E. & M. J. 563
*Conemaugh Dam Disaster..*517, *520, 563
Confidence and Courtesy..... 27
Confidence Mg. Co., Nev., 51, 73, 82, 97, 148, 172, 193, 220, 264, 268, 331, 354, 356, 419, 441, 463, 465, 552
Congress, International Mining and Metallurgical..... 329, 548
Conglomerate Mg. Co., Mich..... 264
Connecticut Mining News..... 123, 147
Connellsville, Pa., Wages Scale, 19, 97, 331, 354, 357
Connellsville, Pa., Coke Prices & Transportation Rates..... 100
Conrad Bros., Mont..... 18
Consignee Gravel G. Mg. Co., Cal.... 330
Cons. Bultfontein Diamond Co., Africa..... 551
Cons. Cal. & Va. Mg. Co., Nev., 18, 73, 82, 172, 173, 193, 220, 242, 265, 266, 285, 331, 354, 356, 376, 419, 421, 463, 465, 529, 550, 552, 596
Cons. Coal Co., Ill..... 123
Cons. Elec. Light Co..... 173
Cons. Elec. Light Co. vs. McKeesport Light Co..... 170
Cons. Esmeralda Mg. Co., Ltd., Nev. 398, 529
*Consolidated Ice Machine Co., Ill... 503
Cons. New York Mg. Co., Nev..... 551
Cons. Ontario Mine, Utah..... 441
Cons. Pacific Mg. Co., Cal..... 353
Cons. Roller Mill Co. vs. Wm. A. Coombs..... 506
Cons. Stock and Pet. Ex. N. Y. Annual Report of..... 552
Cons. Stock and Pet. Ex., N. Y. and Mining Shares..... 584
Cons. Stock and Pet., Ex., N. Y. Reduction of Rate for Listing Mining Stocks..... 597
Cons. Stock and Pet. Ex., N. Y. Rept. of Gratuity Fund..... 58
Cons. St. Nicholas and San Francisco Gold Mg. Co., Mex..... 98
Consolidation North Chicago, Joliet and Union Steel Cos.....246, 268, 418, 439
Consolidation of the Brush, Thomson-Houston, Metropolitan and Western Light Assn. of Mo..... 49
Consolidation of U. S. Depository Mg. Co., and Colo. & Chief Deposit Co., Colo..... 507
Constellation Silver Mg. Co., Utah... 486
Construction and Repair of Roads.... 322
Consular Appointments..... 272
Consumption of Nitrate of Soda..... 450
Contention Mine, Ariz..... 449
Continental Divide Mg. Invt. Co., Colo..... 123
Contract for Construction of Three New Cruisers for the Navy..... 506
Contract Labor Cannot Enter U. S. .. 396
Convention of Boiler Manufacturers. 283
Convention of Chiefs and Commissioners of Labor Statistics..... 572
Contracting Notes..... Weekly
Convention of Miners in Ill..... 419
Convention of River Miners, Pa..... 574
Convention at West Superior, Wis., for Purpose of Considering Improvements to the Water Ways and Channels..... 554
Cook, Geo. H..... 71
Cook Locomotive & Mach. Co., N. J.. 330
Cook, Seth.....218, 307, 331
Coombs, Wm. A., and the Consolidated Roller Mill Co..... 506
Cooper, Edward..... 263
Cooper, Hewitt & Co..... 308
Cooper Process for Glass-Lining Pipes..... 121
Cooper, Wm. T., on Conemaugh Disaster..... 563
Copper and Lead Production and Stocks..... 59
Copper and Tin from Customs Returns, British Statistics of..... 101
Copper Antimony Alloy..... 232
Copper Bullion Shipments from Tucson, Ariz..... 218
Copper Conductors Effected by Electric Currents..... 394
Copper Corner, the Outcome of..... 274
Copper Determination by the Iodide Process..... 48
Copper Discoveries, Colo..... 219
Copper, Electrolytic Assay of..... 342
Copper Estimation by Potassic Cyanide..... 459
Copper Exports..... 20, thereafter weekly
Copper, Exports and Imports of, in 1888..... 32
Copper Falls Mg. Co., Mich., 147, 171 242, 354
Copper Fluctuations in G. M. B., London..... 357
Copper Furnace Record, A Great..... 251
Coppering Iron..... 435
Copper Imports of U. S..... 101
Copper Industry, A Review of..... 29
Copper Industry of Ariz..... 432
Copper Market Review..... Weekly
Copper Market in London During 1888 32
Copper Market Outlook..... 229
Copper Markets in 1888..... 32
Copper Mines of Lower Cal., Mex..... 243
Copper Mines of Nev..... 171
Copper Mines of N. Mex..... 97, 242
Copper Mines of Nova Scotia..... 285
Copper Mines of Ont..... 220
Copper Mines of Spain..... 509
Copper Mines in State of Chiapas, Mex..... 420
Copper Mines of Vermont..... 19
Copperopolis Mine, Nev..... 550
Copper Ornamental Articles, Duty on 461
Copper Practice in Arizona..... 519
Copper, Price of, During 1888..... 32
Copper Production in 1888, 1, 28, 30, 31, 59, 157, 311
Copper Production of Colo. in 1888... 50
Copper Production of Lake Superior, Mich., Mines.... 30, 147, 171, 242, 354, 550
Copper Production of Utah..... 51
Copper Production of the World, By H. R. Merton & Co..... 311
*Copper Property, the Santa Fe, Mex. 345
Copper Queen Cons. Mg. Co., Ariz.... 171
Copper Queen Mine, Wash. Terr..... 98
Copper Question and Mr. Haggin..... 473
Copper Question, The..... 452
Copper Report, James Lewis & Son's, 114, 175, 554
Copper Salts, A New Test for..... 370
Copper Salts, the Electrolysis of..... 161
Copper Silicum..... 547
Copper, Silver and Zinc Mining in Sweden..... 368
Copper Slag Containing Cuprite..... 141
Copper-Steel Alloy..... 477
Copper, Stocks of, in the U. S..... 452
Copper Syndicate and the Comptoir d'Escompte..... 295
Copper Syndicate, Arranging Production, etc..... 445
Copper Syndicate, the French, 174, 245, 289, 295, 317, 423, 445, 467
Copper Trade, Statistics of..... 61
Copper Wire Deteriorated by Electric Currents..... 166
Copper World Mine, Ariz..... 374
Cordova Union Mg. Co., Cal..... 528
Corinth Canal, the Isthmus of..... 48
Cork Springs for Cars..... 216
Corn, Old Indian..... 14
Cornell University, N. Y., Advantages Offered to Technical Students..... 283
Corwith & Co. and the Kansas City Sm. and Refg. Co., Suit with..... 4
Corwith, Nathan..... 506
Corpus Christi Mine, San Luis Potosi, Mex..... 442
Corthell, E. S..... 71
Cortez Mines, Ltd., Nev..... 596
Cosmopolitan Mine, Cal., 122, 283, 374, 461, 548
Coste, E., on Mineral Production of Canada..... 453
Cost of Coal Production in Germany and France..... 454
Cost of Copper at the Calumet & Hecla and Anaconda Mines..... 452
Cost of Mining and Reduction, Estimated..... 561
Cost of Mining in Californian and Spanish Quicksilver Mines..... 10
Cost of Producing Ore in Sinaloa, Mex. 442
Cost of Steam and Water Power in Mass..... 502
Cost of Storage Battery Motive Power. 370
Cotton Mills in China..... 431
Court, E. E..... 365
Courtesy and Confidence..... 27
Cowboy Mine, Dak..... 375
Cowles Aluminum Patents in Germany..... 166
Cowles & Heroult Aluminum Processes.....386, 387
Coxe Bros. & Co. vs. Lehigh Valley R.R., 53, 100, 150, 174, 222, 288, 314, 487, 576
Coxheath Copper Mine, N. S....52, 285, 398
Crafts, J. M., on Purification of Mercury..... 260
Craighill, Col. W. P..... 240
Crane Iron Co., Pa.....242, 373
Crane, the Largest in the World..... 392
Cranston Mine, R. I..... 376
Craven, Frank S..... 218
Crawford, Mrs., vs. Colby Mine, Mich. 284
Cream of Tartar Mfrers., Combination 21
Crescent Mg. Co., Colo..... 171
Crescent Mg. Co., Utah....19, 354, 441, 596
Creston & Colorado Mg. & M. Co., Sonora, Mex..... 332
Crispin Mine, Ariz..... 17
Crocker, Francis B.....506, 594
Crocker Mg. Co., Ariz., 82, 173, 356, 465, 552
Crookes, Wm., on Spectroscopy in Chemical Physics..... 395
Croselmire Process, Erection of Works for, at Denver, Colo..... 17
Croselmire's Zinc Process.....17, 135
Crown Cartridge Factory, Mo..... 439
Crown Pt. Mine, Cal..... 17
Crown Pt. Mine, Colo..... 17
Crown Pt. Mine, Ont..... 464
Crown Pt. Mg. Co., Nev., 82, 173, 242, 266, 331, 354, 256, 376, 419, 463, 465, 551, 552
Crozer S. & I. Co., Va..... 94
Cruz Mine, Hidalgo, Mex..... 52
Cuba, Mang. & I. Mines of..... 285
Cuban Mining News..... 285
Cueva Santa Mine, Hidalgo, Mex..... 99
Cumberland Iron Works, Pa..... 533
Cumberland Mg. and Sm. Co., Mont.. 73
Cunningham's, Capt., Process for Producing Metallic Sodium..... 395
*Cupolas for Melting Pig Iron, Construction of.....161, 185, 232, 254, 299
Cupric Chloride in Leaching Silver Ores.....275, 364, 434, 498, 563
Cuprite in Copper Slag..... 141
Curie's Electrometer..... 166
Curnow, John W., Shaft-Sinking Record..... 11
Current Canal, A..... 376
Curtis, S. W.....99, 125, 149
Cusihuiriachic Mine, Chihuahua, Mex 441
Customs Duties in Tasmania..... 327
Custom House Returns, a Needed Reform in..... 295
Customs Regulation for Imports from Manilla..... 506
Customs Tariff of Bolivia..... 16
Customs Tariff of Queensland..... 327
Cuyahoga Mg. Co., Ont..... 398
Cyanide of Potassium as a Lixiviation Agent for Silver Ores..... 1
Czar Mine, Dak..... 375

D

Dade Coal Co., Ga..... 50
Daggett, Elsworth.....319, 461
Daggett, Ellsworth, on Lixiviation of Silver Lead Ores..... 319
Daisy Coal Co., Ga..... 283
Daisy Mines, Wash Terr..... 98
Dakota Artesian Wells..... 327
Dakota Mining News, 17, 72, 96, 123, 147, 171, 219, 284, 306, 331, 374, 397, 440, 462, 485, 508, 529, 550, 573, 595
Daly Mg. Co., Utah..51, 99, 124, 196, 265, 285, 308, 441, 465
Dam, Braintree, Mass..... 13
Dam Construction, Superintendent, Appointment of in N. Y..... 548
Damages to Surface by Mining Salt to be Paid for..... 280
Daniell, John, On Best Shaft Sinking Record..... 135
Danvers, Sir Juland, On Indian Railroads..... 460
Darlington, John..... 263
Darrah, Prof. Thos..... 377
Darwin Mine, Dak..... 375
Davidson Mine, Colo..... 95
Davidson, O. C..... 71
Davis-Elkins Coal Co..... 283
Davis, L. H..... 125
Davis, Thos..... 240
Day, Dr. D. T., On Mineral Production of the U. S..... 540
Day, M. H..... 485
Dayton, J. B..... 396
Dead Medicine Mine, Wash. Terr..... 98
Deadwood Cons. Mg. & Mill. Co., Dak..... 374, 397
Deadwood Mining Stock Market in 1888..... 82
Deadwood Reduction Co., Dak..18, 82, 219, 241, 306, 374
Deadwood-Terra Mg. Co., Dak., 171, 374, 595
Dean, Richard..... 353
De Bardeleben C. & I. Co., Ala....170, 527
De Beers Diamond Co., Africa..... 551
Débris Question in Cal..... 66, 84, 118, 157
Debt of Canada..... 453
Debts of States..... 570
Decatur Iron Bridge & Construction Co. Works, Ala..... 218
Decatur Mg Co., Colo..... 244
De Crano, E. G.....26, 126, 222, 244
Deering, W. H., on Modern Explosives..... 184
Deesz Natural Gas, Coal & Oil Co., Colo..... 146
De Forest, Cyrus H..... 283
De Forester, A., on Production of Sulphur in Italy in 1888..... 593
Dehera and Colorado Coal Mines, Prov. of San Juan, Arg. Republic.. 125
Deily, Philip P..... 49
De Konich, Prof. S. L. on Colorimetric Determination of Manganese..... 460
Delamater, Cornelius H..... 146
Delamater Iron Works Co., N. Y.... 305
Delaware & Hudson Canal Co., 124, 126, 148, 310
Del., Lackawanna & Western R. R. Co.....53, 174, 223, 532
Delaware Mining News..... 123
De-la-Mar Mine, Idaho..... 463
Delfina Mine, Guerrero, Mex..... 420
Delhi Mine, Cal..... 353
Delia Mine, Dak..... 375
Delmont Kaolin Deposit Co., N. Y.... 146
Del Monte Mg. Co., Nev., 82. 124, 172, 266, 356, 465, 550, 552
Delta Mg. Claim, Dak..... 485
Denton, D. T..... 94
Dent's Run Coal Co., Pa..... 73
Denver, Colo., Mint, Deposits of Gold and Silver at..... 72
Denver Fuel Co., Colo..... 219
Denver Mine, Chihuahua, Mex..... 19
Denver Mine, Colo.....241, 330
Departure of Engineers for Europe... 506
Departure of Engineers for Nicaragua..... 506
Deposits of Gold and Silver at Mint, Denver, Colo..... 72
Deposits of Phosphate of Lime in Russia..... 442
Desert Crystal Salt Works, White Plains, Nev..... 51
Deshler, Chas. D..... 375
Desloge, John M..... 352
Deterioration of Copper Wire by Electric Currents..... 166
Detroit Co., Ariz..... 374
Detroit Spiral Tube Co., Mich..... 16
Dewey, Prof. F. P., on Heroult Process..... 387
Dewey, Prof. Melville..... 71
*De Wit Steam Pile Driver..... 12
*De Wolfe, Judge, On the King, *et al*, vs. Amy & Silversmith Mg. Co. Case..... 84
Dexter Mines, Colo..... 440
*Diamond Drill Prospecting..... 235
Diamond Exports from Brazil..... 195
Diamond Fields of India..... 543
Diamond Industry of South Africa... 14
Diamond Mg. Cos., South African, Consolidation of..... 551
Diamond, The Great Julius Pam..... 302
Diana Mg. Co., Nev.....82, 173, 356, 552
Diaz's, Pres't., Message to the Mexican Congress..... 342
Dickens-Custer Mines, Ltd., Idaho.. 529
Dickert & Meyers Sulphur Co., Utah, 265, 596
Dickerson, E. N., On Heroult Process. 387
Dickinson, Platt K..... 504
Dieffenbach Sampling Works, Coahuila, Mex..... 420
Dinero Mg. & Mill Co., Colo.....353, 374
Directoria General de la Cuidad de Mexico..... 547
Dividends..... Weekly
Dissociation of Carbonic Acid..... 184
Dividend Paying Mines Table....Weekly
Dividends Paid by American Mines in 1888..... 28
Dividends Paid by Mining Companies. Monthly Record.....141, 217, 328, 417, 505
Division of Labor in Scientific and Technical Work..... 204
Dixie Mine, Dak..... 306
Dixon Crucible Co., N. J..... 396
Dodson, Weston..... 49
Dolbear, Prof. A. E., on Electric Rapid Transit..... 451
Dollfus, M. E., On Motive Power by Atmospheric Exhaust..... 83
Domestic and Foreign Coin, Quotations of, 423, 445, 467, 488, 511, 532, 554, 576, 599
Donaldson, Prof. Henry H..... 16
Don Enrique Mg. Co., Chihuahua, Mex..... 441
Donnelly & Steinwitz Mine, Idaho... 96
Dorsey, Edward Bates.....484, 530
Dos Caberas Mine, Sonora, Mex..... 442
Douglas, James.....170, 352
Douthett, A. T..... 283
Dove's Nest Mine, Colo..... 306
Dowling Patent, a Device for Stirring Flour..... 506
Dredge, a Compressed Air Sand..... 417
*Dredge, the Osgood..... 411
Dredges, American Improved Cannot Enter Free..... 373
Dredging by Compressed Air..... 483
*Drilling Machine, the Austin Portable..... 207
Drury Cove Line Co..... 421
Dry Concentration of Antimony Ore.. 187
Dublan's, Señor, Report on Mexican Finances..... 432
Duboul, M. A., on the Strength of Hemp and Aloes..... 483
*Ducker Portable House Co., N. Y., *115, 122, 146, 352, 418
Dudley Mg. Co., Nev.....82, 173, 260, 366
Dufferin Mine, Nova Scotia..... 265
Duffy, Daniel..... 122
Duluth & Iron Range R. R..... 550
Duluth I. & S. Co., Minn.....223, 305, 373
Dunderberg Mg. Co., Colo..... 219
Dunkin Mg. Co., Colo...72, 147, 284, 374, 443, 531, 549
Dunsmuir & Sons..... 308
*Dunstan's Safety Catch for Mine Cages..... 65
Durability of Steel Rails..... 348
Durand Mine, Nev..... 398
Durango, Mex., Mining News....195, 243, 332, 420
Durango Smelter, Colo..... 50
Durant-Bonnybel Litigation, Colo. 123, 171
Durant Mg. Co., Colo.....241, 306
Duration of British Coal Fields..... 302
*Durfee, W. F., on Construction of Cupolas for Melting Pig-Iron..161, 161, 185, 232, 254, 299
Duryea Mine, Cal..... 528
Duty on American Dredges Re-Imported..... 373
Duty on Crushed Asbestos..... 49
Duty on Ferro-Silicon..... 599
Duty on Lead in Silver-Lead Ores. 2, 76, 430, 453, 473, 475, 541, 563, 583, 585
Duty on Ornamental Articles, Copper. 461
Duty on Potash Salts..... 384
Duty on Salt..... 250
Duty on Steel Crop Ends..... 170
Duty on Sulphuric Acid, Petition for. 272
Dynamite for Sinking Pier Foundations..... 429
Dynamite Gun, Contract for Construction..... 146
Dynamite Gun, Zalinski, Rights Sold to Russian Government..... 461
Dynamos, Elastic Foundations for ... 166

E

Eagle Co., Colo., Mineral Developments of.....171, 397
Eagle Mine, Wash. Terr..... 98
Eagle Mountain Mining Co., Jalisco, Mex.....98, 332, 421
Eagle Town Mine, Idaho..... 96
Eames, Richard, Jr.....373, 376
Earthenware, Strength of Hollow Porous..... 66
Earth's Rotation Proved by the Pendulum..... 505
East Chicago Tin Plate Co., Ill..... 572
East End Mine, Ontario.....98, 464
East Jackson Iron Mg. Co., Mich..... 419
East New York Mine, Mich..... 242
East Sierra Nevada Mg. Co., Nev., 441, 485, 487
Eastern Alaska Mg. & Mill. Co., Alas. 507
Eastern Development Co., Ltd., Nova Scotia.....52, 285, 398
Eastern Nail Assn., Meeting of..... 336
Eastern Oregon Mg. Co., Ore..... 244
Eaton & Merritt Claim in Minnesota. 193
Economic Value of Electric Light and Power..... 280
Economista Mexicano on Mexican Lead Ore Question..... 541
Economy of Compound Locomotives. 429
Eddy Elec. Mfg. Co., Conn..... 373
Edgar Thompson Steel Works, Pa., 240, 260, 396
Edison Elec. Illuminating Co., Listing of at N. Y. Stock Exchange..... 443
Edison Elec. Light Co., 49, 71, 100, 170, 222, 266, 373, 396, 439, 443, 553
Edison Elec. Light Co. and the Bates Refrigerator Co..... 100
Edison Elec. Light Cos., Consolidation of..... 553
Edison Elec. Light Co. vs. Westinghouse-Church Kerr Co..... 439

Edison Gen'l Elec. Light Co., 49, 171, 396, 553
Edison Magnetic Ore Separator, 171, 181, 305, 331
Edison Mine, Colo.....241, 397, 462, 507
Edison Patents Void in Canada..... 237
Edison, Thos. A.....16, 396
Edmunds, T. F., & Co.....362, 534
Edna Mine, Dak..... 375
Education, Examinations in..... 59
Egan, Hon. John F..... 49
Egan Mines, Idaho..... 375
Egleston, Prof. Thomas, on Stetefeldt's Lixiviation of Silver Ores.... 348
Egypt, Canal Works in..... 571
*Eiffel Tower *112, 280, 327, 547
Eighty-Four Mine, Colo..... 171, 397
Eilers, Anton..... 329
Elastic Foundations for Dynamos.... 166
Elaterite.....295, 385
El Banco Mine, Durango, Mex..... 195
Elbers, A. D., on Blast Furnace Slags. 569
Elbers, A. D., on Sulphurous and Desulphurized Blast Furnace Slag..... 522
El Callao Gold Mg. Co,, Ltd., Vene. 464
El Capitan Mine, Colo..... 330
El Carmen Mine, Sonora, Mex..... 442
El Cristo G. & S. Mg. Co., Rep. of Col., 125, 172, 221, 243, 309, 333, 377, 399, 442, 465, 48 , 509, 551
Eldridge Salt Works, N. Y..... 330
El Economista Mexicano on the Lead Ore Question..... 543
Electric and Automatic Brake..... 71
Electric Brake, Test of..... 352
Electric Coal Mining Machines..... 545
Electric Conductors Underground.... 352
Electric Currents, Effect Copper Conductors..... 394
Electric Currents of 10,000 Volts .363, 386
Electric Deterioration of Copper Wire..... 166
Electric Distribution of Power on the Rhine..... 570
*Electric Engines and Pelton Wheels in the Comstock..... 320
Electric Engraving..... 120
Electric Gold Extracting Process..... 121
Electric Heating..... 216
Electric Hydraulic Co..... 192
Electric Light Convention and the Use of High Tension Currents..... 252
Electric Light in China..... 260
Electric Lighted Buoys..... 90
Electric Method of Producing Bleaching Powder Direct from Natural Brine..... 600
Electric Motor Patents..... 215
Electric Motors, Use of.....170, 527
Electric Motors, Waterproof..... 460
Electric Pianos..... 327
*Electric Pump..... 545
Electric Railroad Brake..... 205
Electric Railroad Crossing Signal..... 216
Electric Railway, the Carstairs in Scotland..... 481
Electric Railway, the Largest in the United States..... 330
Electric Rapid Transit.....451, 473, 475
Electric Rays..... 571
Electric Re-cutting of Files..... 216
Electric Stocks, 26, 58, 100, 126, 150, 173, 196, 222, 244, 266, 287, 378, 422, 443, 466, 487, 510, 531, 553, 575, 597
Electric Storage Batteries, the Julien. 181
Electric Street Lighting, a New Method..... 66
Electric Supply Corporation of London 386
*Electric Transmission at the Comstock Lode..... 498
*Electric Tree-Felling Machine..... 119
Electric Watches and Clocks 417
*Electric Welding, Benardos..... 13
Electric Welding for Cable Rope..... 527
Electric Welding of Pipes..... 495
Electric Welding, Organization of a Company to Work Prof. E. Thomson's Foreign Patents..... 439
*Electric Welding, Thomson's, *136, 439, 495, 527, 594
Electric Wire Question, The Underground 60, 158, 253
Electrical Census Machine..... 483
Electrical Engineering at Columbia College, Establishment of a Course at.....506, 594
Electrical Engineering Dept. at Princeton University, N. J.. 439
Electrical Engineers, American Institute of.....484, 572
Electrical Patent, Decision in favor of Julien Elec. Co..... 280
Electrical Power in Mining Districts, Use of..... 16
Electrical Subway Explosions..... 296
Electrical Traction, Series System.... 301
*Electrical Transmission of Power, 8, *498, 570
Electrical vs. Rope Transmission of Power..... 317
Electrical Watchman Detector in Use in Coke Region, Pa..... 530
Electrician, Electrical Trades Directory and Handbook for 1889..... 302
Electricity Used for Keeping Buildings Cool..... 527
Electro-Magnetic Tachyphone..... 475
Electrolysis of Chloride of Sodium... 110
Electrolysis of Copper Salts..... 161
Electrolytic Assay of Copper..... 342
Electrolytic Bleaching Process, The Hermite..... 328
Electrolytic Extraction of Sodium and Chlorine from Sea Salt..... 61
Electrolytic Method of Liquefying Gases..... 216
Electrolytic Separation and Refining of Metals..... 259
Electrolytic Separation of Cadmium from Zinc..... 570
Electrometer, A New..... 166
Electroplating of Glass and Porcelain..... 571
Elementary Text-Book of Chemistry 237
Elevators of the Eiffel Tower..... 547
Elgin Mine, Ontario..... 98
Elizabeth Mg. Co., Mont., 307, 310, 398, 487, 508, 529, 573
Elk C. & C. Co., Pa..... 441
Elk Creek Mines, Idaho..... 96
Elkhorn Mine, Idaho..... 96, 264
Elliott, S. Lowell..... 170
Ellis & Lessig Steel and Iron Co., Pa..... 484, 594
Elmore G. Co., Ltd., Idaho..... 397
El Paso Irr. Co., Tex..... 17
El Paso Mine, Colo..... 397
El Refugio M. & M. Co., Chihuahua, Mex..... 19
El Talento G. Mine, Rep. of Col..... 309
Ely, Hon. S. P..... 94
Ely, Prof. R. T..... 94
E. M. on Mexican Ore Question...475, 585
Emanuel, W. H..... 50
Embankments, Poppies as Protection. 280
Emerald, Central Lake and Lievre District Phosphate Co., Ltd., Quebec 551
Emerald Mine, Ariz..... 440
Emeralds, Artificial..... 302
Emery, Titus Salter, on a Missing Link..... 208
Emery, Titus Salter, on Inorganic Origin of Coal and Limestone..... 183
Emma Mines, Wis..... 398
Emmons, Dr. S. H..... 71
Emmonsite Explosives, Guns and Ammunition Co..... 71
Empire Mang. & I. Co., Cuba..... 285
Empire Mg. Co., Mont., 73, 219
Emigrants Wanted in Rep. of Col.... 503
*End-Line in Mont..... 84
End-Lines and Side-Lines..... 181
*End-Lines and the Supreme Court... 109
Endres, John J..... 506
Engine, Future of the Steam..... 546
Engineering and Building Record and Subways..... 296
ENGINEERING AND MINING JOURNAL, Export Edition of.....2, 495
ENGINEERING AND MINING JOURNAL, Positions Vacant Column..... 439
ENGINEERING AND MINING JOURNAL, Value of the, 16, 134, 160, 184, 319, 474. 562
Engineering News, Modesty of.... 27
Engineers Abroad, the American, 506, 548, 586
Engineers, Chinese..... 570
Engineers' Club of Kansas City, Meeting of..... 484
Engineers' Club of St. Louis Collecting Local Data..... 460
Engineers' Society of Western Pa., 94, 146, 329
Engines, Allis' Compound..... 439
Engines, Westinghouse, with Interchangeable Parts..... 461
Englehardt, E. N.....133, 218
Englehardt's, Dr., Report on Salt Deposits of New York..... 133
English Coal Mining Statistics, 1888... 387
English Investment in Gas..... 302
English Investments in Mex..... 548
English Manufacturers Use American Names to Sell Goods..... 407
English Mining Companies in South Africa..... 273
English Mining News..... 285
English Salt Output to be Taxed..... 280
English Salt Trust.....215, 604
English Square Rope Driving..... 483
Engraving by Electricity..... 120
Enterprise G. & S. Mg. Co., Utah..... 243
Enterprise Mine, Sonora, Mex..... 332
Enterprise Mg. Co., Colo.....440, 573
Ericsson Coast Defence Co., N. Y..... 305
Ericsson, John.....229, 234, 352, 439
Ericsson, John, Erection of a Monument of, in N. Y..... 439
Ericsson, Rudolph, Inventor of "Extralite"..... 218
Erie & Western Transportation Co.... 288
Errett Russell..... 439
Esmeralda Co., Mex..... 19
Esperanza Mg. Co., Nicaragua, C. A.. 377
Espiritu Santo Mine, Hidalgo, Mex.. 52
Esquille's, Leon, Photographing Phonograph..... 394
Estey, Robert..... 353
Estrella Mine, Guerrero, Mex..... 420
Etowah Mg. & Mfg. Co., Ga.....71, 283
Etta Mine, Dak.....375, 462
Euclid Stone for Building Purposes... 228
Eureka & Palisade R. R. Co., Nev.... 397
Eureka Co., Ala..... 170
Eureka Cons. Mg. Co., Nev.73, 97, 147, 220, 242, 284, 307, 309, 354, 355, 364, 441, 465, 485, 529, 552, 575
Eureka Excelsior Mine, Ore..... 508
Eureka Improvement Co., Minn..... 594
Eureka Mill, Nev..... 463
Eureka Mine, Colo..... 171
Eureka Mine, Utah..... 420
Eva Mine, Sonora, Mex..... 19
Evans, John H.....122, 283, 316
Evening Star Mg. Co., Colo.....147, 397
Everhard, John F..... 418
Everhart Coal Co., Pa..... 331
Evolution of the Scientist..... 561
Examinations in Education..... 59
Excelsior Copper Co., Ltd., Quebec.509, 551
Excelsior Iron Works Co., Ohio 263
Excelsior Mine, Dak..... 375
Exchanges Building in the U. S 176
Exchange for Exhibition of Mineral Ore at Denver, Colo..... 419
Exchequer Mg. Co., Nev...82, 173, 266, 356, 398, 465, 486, 550, 552
Exhibition, a German Floating..... 15
Exhibitions of Mining Devices in Berlin..... 302
Exner, Prof. Franz..... 352
Exploring Ground West of Present Workings, Comstock Lode, Nev.... 376
Explosives, Modern..... 184
Explosives, Regulations for Transportation and Storage of.....562, 565
Explosives, Report of French Commission on..... 394
Explosive, Somonossoff's New..... 186
Export Duty on Logs from Canada... 122
Export Edition of the ENGINEERING AND MINING JOURNAL..... 2
Export Markets..... 107
Export Trade. 2, 5, 205, 318, 327, 329, 408, 495
Exporters, Hints to.....217, 327, 328, 505
Exports and Imports of Copper in 1888 32
Exports and Imports of Lead since 1867..... 34
Exports and Imports of Metals, New York..... Weekly
Exports and Imports of Quicksilver from England..... 577
Exports and Imports of Zinc since 1867..... 35
Exports of American Machinery.. 204
Exports of Copper...20, thereafter weekly
Exports of Diamonds from Brazil..... 195
Exports of Lead from the U. S..... 127
Exports of Lime and Cement..... 272
Exports of Mineral Oil, 51, 193, 264, 354, 464, 551
Exports of Nitrate of Soda..... 450
Exports of Oil, 74, 124, 148, 172, 194, 242, 285, 308, 332, 354, 376, 398, 464, 486, 509, 530, 551, 574, 596
Exports of Quicksilver.....357, 488, 555
Exports of Roofing Slate.....272, 362
Exports of Silver from the U. S..... 94
Exports of the United States..... 203
Exports of Zinc from the U. S..... 127
*Exposition, the Paris.....*454, 500
Extralite, the New Explosive..... 218
Eyre, Manuel, vs. North Belle Isle and Best & Belcher Mg. Cos..... 242
Eyrie Mine, Nev.....147, 375

F

Fairmount C. & I. Co., Pa.....19, 376, 574
Fairview Mine, Wyo..... 376
Fairy Tales of Science..... 2
Falco, M..... 464
Falcon S. & C. Co., Colo..... 353
Fall Creek Placers, Colo..... 397
Falling Spring Furnace, Pa..... 396
Falu Copper Mine, Sweden..... 368
Farish, John B..... 548
Farnsworth, P. T.....16, 19, 124, 196
Farrand, Col..... 595
Farwell Mg. Co., Colo.....17, 397
Father Hennepin Mine, Wis..... 148
February Mine, Dak..... 375
Federal Valley Coal Co., Ohio..... 220
Federation Nationale..... 506
Felton, Saml. M..... 122
Fencing Wire, Galvanized, Drawback on Export of..... 283
*Fernow, B. E., on Use of Metal Ties.. 278
Ferrantis 10,000-Volt Currents.....363, 386
Ferro Silicon, Duty on..... 599
Fertilizer Market of the United Kingdom..... 516
Fertilizer Market Review..... Weekly
Fertilizing Chemicals, Duty on..... 512
Fifth Biennial Report of the Bureau of Labor Statistics of Illinois..... 571
Files Recut by Electricity..... 216
Finances and Resources of Mexico... 407
Finances of Argentine Rep..... 364
Finances of Chili..... 66
Financial News, London..... 18
Financial Statements of Mg. Cos., 82, 90, 173, 265, 356, 465, 552
Findley I. & S. Co., Ohio..... 263
Fink, Albert..... 572
Fire-Clay, Deposits of, in Boulder Co., Colo..... 462
Fire-Damp Indicator and Pa. Legislation..... 235
Fireproof Paints..... 499
Fire Statistics of New York & Chicago 593
Fires to Mines, etc., Law for Punishment of, in Mich..... 96
First National Mine, Colo..... 397
Fish in Railway Cars, Carrying Live. 215
Fishback Roll. Mill, Pa.....71, 122, 240, 305
Fishborn, R. E..... 71
Fitzgerald, E..... 95
Fitzpatrick, J..... 122
Flagler Red. Works, N. Mex..... 220
Flagstaff Mg. Co., Ltd., Utah..... 596
Flat Creek Mine, Nev..... 596
Flint Rock, Deposits of, in Pa..... 242
Floating Mines in London..... 87
Flood, James C..... 192
Floods, the Great, in Pa..... 532
Florence C.. L. & O. Co., Dak..... 219
Florence Mg. & M. Co., Colo..... 264, 419
Florenza Mine, Chihuahua, Mex..... 19
Flores, M. E..... 125
Flour Milling Machines, Trial of, in Chili..... 418
Flowery Mg. Co..... 244
Fly Wheels of Steel Wire..... 523
Fomente Febril..... 418
Foote, R. W. et al and Henze et al.... 508
Ford, I. T..... 305
Foreign & Domestic Coin, Quotations of....423, 445, 467, 488, 511, 532, 551, 576, 599
Foreign Investments as Promoters of Export Trade..... 408
Foreign Land Owners in Texas..... 295
Foreign Mining Investments in the U. S. Territories..... 327
Forest Conservancy in India..... 215
Forest Preservation and the Government Timber Suits..... 364
Forestry and the Value of Timber Stolen..... 385
*Forge, the Thwaite Oil-Fired..... 324
Forsyth, Robt..... 439
Fort Payne C. & I. Co., Ala.....192, 263
Fort Pitt Gas Co., Pa..... 97
Fort Wayne Jenney System..... 373
Fort Scott Foundry & Machine Works, Kans..... 94
Fortification Board Recommendations..... 593
Fossil Fuels of Illinois..... 477
Found Treasure Mg. Co., Nev., 82, 173, 193, 307, 356, 375
Found Treasure Mg. Co. vs. N. Commonwealth Mg. Co.. Nev.....193, 307
Foundations, Dynamite for Sinking.. 429
Fowler, Percival..... 307
France, Aluminum Manufacture in.. 327
France, Cost of Coal Production in... 454
France, Mineral Production of..... 302
France, the Failure of the Terreneire Works..... 460
France Uses Steel Railway Ties..... 547
Francklyn, Chas. G.....333, 355
Franklin Lode, Colo..... 528
Franklin Mg. Co., Mich., 18, 124, 147, 171, 242, 354, 485
Frazer, Dr. Persifor.....2, 439, 505, 594
Frazer, Dr. Persifor, on the Fairy Tales of Science..... 2
Frazier, Prof. B. W., on Stetefeldt's Lixiviation of Silver Ores..... 505
Fredrica Mine, Colo..... 50
Free Entry of Jewelry sent to Paris.. 283
Freight Rates from Pittsburg to Port Huron Points..... 401
Freight Rates on Coal.....Weekly
Freight Rates on Coal and Coke..... 467
Freight Rates on Coal in Iowa..... 423
Freight Rates on Iron and Steel from Chicago to St. Paul..... 532
Freight Rates on Iron from Chicago Eastward..... 554
Freight Rates on Iron from Cleveland 599
Freight Rates on Iron from Detroit and Toledo..... 532
Freight Rates on Iron from Lake Ports..... 488
Freight Rates on Pig Iron.....20, 223
Freights, Del. & Hudson Canal Co.... 311
Freights for Shipments Abroad 335
Freights from Pittsburg to the Northwest..... 174
Freights, Lake, on Ore..... 174
Freights on Pig Iron, Southern RR. & S. S. Ass..... 401, 489
Freights to Africa..... 127
Freights to Australia..... 127
Freights to South America..... 127
French Commission on Explosives, Report..... 394
French Copper Syndicate, 174, 229, 245, 274, 289, 295, 317, 423, 445, 467
French Creek Iron Mine, Pa..... 376
French Finance and the Comptoir d'Escompte..... 295
French International Congress, Mines and Metallurgy..... 329, 548
French, Mr., Sculptor..... 461
French Prospectus, Hub Gold Mg. Co. 230
French Walnut..... 118
Frick, Henry Clay..... 71
Frick, H. C., Coke Co., 19, 51, 124, 332, 354, 420, 530
Fries, Wm.....49, 146, 147, 527
Fruits of Courtesy and Confidence.... 27
Fronteriza Mg. Co., Coahuila, Mex., 19, 98, 464
Frossard, John D., on Apatite Deposits of Ontario..... 194
Fteley, A..... 71
Fuel. Peach Stones as..... 417
Fuller, Joseph W..... 461
Fuller Placer Mg. Co. and Boss Lode, Colo..... 508
Furnace Employés in Ohio, Reduction of Wages..... 484
*Furnace for Cinnabar Fines at Almaden, Spain..... 544
*Furnace Grate, the Hopcraft..... 343
Furnace Lining, Chrome Iron Ore for.....394, 439
*Furnace, McSweeney's Puddling for Natural Gas..... 367
Furnace Record, a Great Copper..... 251
Furnace Record, the Hinkle Charcoal Blast..... 432
Furnace Slag, Sulphurous and Desulphurized 522, 569
Furnace, the Pietzka Revolving Puddling.....188, 279
Furnaces at Leadville, Colo., Operations of..... 192
Furnaces of the Philadelphia Sm. & Rfg. Co., Colo..... 253

G

Gage Mine, Colo..... 95
Gall, Bumiller & Unzicker..... 240
Galena Mg. & M. Co., Colo..... 338
Galena Ore, Lixiviation of Argentiferous Zinc Blende, 136, 157, 163, 189, 236, 251, 255, 319, 498
Gallagher, W. E., on Steam Colliers.. 584
Gallia Furnace, Ohio 594
Gamma Mg. Claim, Dak..... 485
*Ganz & Co.'s Electric Tree-Felling Machine..... 119
Garbutt Mine, Colo..... 17
Garfield Mg. Co., Ltd., Nev....398, 508, 596
Garnet Hill Cons. Mg. Co., Colo..... 306
Gas Furnace, Henderson's..... 62
Garrison Foundry Co., Pa..... 122
Gas Investments in England..... 302
Gass-Well, a Combined Fresh and Salt Water..... 11
Gas-Well near Alamosa, Colo..... 219
Gases, Electrolytic Method of Liquefying..... 216
Gaskill, Harvey P..... 329
Gates Iron Works, Ill 240
Gauges of the Railroads of the World 15
Gaujot, E..... 170
Gem Mine, Idaho..... 440
General Formula for the Uniform Flow of Water in Rivers and other Channels..... 217
Generalized Section of the Coal Measures of Southern Ohio, from the Sharon to York..... 280
Geographical Congress in Paris..... 94
Geological & Topographical Map of the Silver M'f'n Mg. Dist., Prov. of Ontario, with Annual Report, 1887. 328
Geological Survey of Arkansas..... 341
Geological Survey of India..... 543
Geological Survey of New Jersey..... 526
Geological Survey, The U. S..... 594
Georgene Mine, Nev..... 508
Georgetown, Colo., Ore Markets..... 221
Georgia C., I. & S. Co., Ga..... 71
Georgia Mg., Mfg. & Investment Co. 50

Georgia Mining News.....353, 375, 595
Gephart, J. W.....439
German Competition in Export Trade 495
German Floating Exhibition.....15
German Mining Statistics.....410
German Prize Problems.....191
Germania Smelting Works, Utah..51, 441
Germany, Coal Production of.....454, 526
Germany, Cowles' Patents Sustained 166
Germany's Stock of Gold.....394
Germany, The Lead and Lead Oxide Production of.....460
Gertie Mine, Dak.....375
Geyser Mg. & M. Co., Colo.....147, 549
Geysers, Soaping.....524
Ghilian, A., on Volumetric Method of Determining Manganese.....394
Giant Compound Mfg. Co., N. J.....572
Gilbert, E. Jay.....71
Gilpin Co. Concentrators, Successful Use of.....419
Gilpin, Jr., Edward, on Nova Scotia Mining Statistics.....416
Gilsen & Woodfin, Vt.....19
Gilsonite Production, Utah.....52
*Glacier, the Whitney, in California. 433
Gladstone Mine, Idaho.....264
Glasgow Iron Co., Pa.....94, 240
Glaskin, Edwin.....563
Glass, A New Variety of.....570
Glass and Porcelain, Electroplating 571
Glass-Lined Iron Pipes.....121
Glass Tank, The Largest in the World 506
Glencoe Iron Works, Ohio.....330
Glenmore Iron Co.....461
Glenwood Coal Co., Pa.....332
Globe, a Great.....302
Globe Refg. Co., Pa.....285, 420
Globe Sm. and Refg. Co., Colo.....95
Glorieta Mine, N. M.....97
Glycerine, New Use for.....519
Gnomum, a New Element.....526
Goble & Lane Mill, Colo.....397
Godbe, Ernest L.....94
Godbe, S. T.....51
Gogebic Dist. Iron Ore Production for 1888.....146
Gogebic Dist. Iron Ore Shipments. 461, 489, 507, 527, 548, 573, 594
Gogebic Investment Co.....421
Gogebic Iron Properties and Stocks in 1888.....42
Gogebic Mining Stocks.....399, 421
Gold and Silver Production in 1888. 28, 209, 540
Gold Bonanza in South Africa.....341
Gold Deposits in South Africa.....530
Gold Discoveries Batopilas Dist., Mex. 5
Gold, Discovery of, in Virginia.....441
Gold Dust Swindle in Russia.....395
Gold Extracting Process, Electric....121
Gold Field of Arizona, A New.....275
*Gold Field of Santa Clara, Lower Cal.....265, *276, 309, 441
Gold Field of the Transvaal.12, 206, 273, 409
Gold Fields of the South.....254, 458
Gold Fields of Victoria.....571
Gold, Germany's Stock of.....394
Gold in Australia, First Discovery of. 570
Gold in Lower California.....309
Gold King Mg. Co., Colo.....397, 509, 528
Gold Mines in California, Danger of Buying.....528
Gold Mines of Alabama.....218
Gold Mines of New H.....124
Gold Mines of the Transvaal.....206
Gold Mountain G. & S. Mg. & Red. Co., Ariz.....263
Gold Ores, Lixiviation of.....346, 366, 388
Gold Production of Cal.....343
Gold Production of Colo. in 1888.....50
Gold Production of Idaho in 1888.....51
Gold Production of India.....125
Gold Production of Queensland Mines 125
Gold Production of Utah.....51
Gold Production of South Africa.....530
Gold Production of the U. S. in 1888... 28
Gold Queen Mg. & Mfil. Co., Colo.....397
Gold Returns from South Africa.....11
Gold Safe & Grizzly Bear Mines, Dak. 485
Golden Age Mine, Colo.....573
Golden Eagle Mine, Colo.....397
Golden Era Mines, Nev.....596
Golden Era Mg. Co., Mont.....441, 443, 529
Golden Fleece Mg. & M. Co., Colo.....330
Golden King Mg. Co. Colo.....549
Golden Leaf Mine, Mont.....573
Golden Messenger Mg. & M. Co., Mont 463
Golden Reward Mg. Co., Dak.....374, 397
Golden Treasure Mines. Colo.....95
Golden West Mg. Co, Ariz.....484, 594
Golden Wonder Mine, Colo.....171
Gonabrod Mine, Colo.....353
Goodale, Geo. L.....16
Goode, Prof. G. Browne.....16
Gordon, Strobel & Laureau Co., Ltd., 305, 330, 396
Gore, Dr. G. on Electrolytic Separation and Refining of Metals.....259
Gorham, Austin G.....305
Gould & Curry Mg. Co., Nev., 82, 123, 173, 266, 331, 354, 356, 463, 465, 552
Gould, Dr. B. A.....373
*Gouvy, Jr., M. A., on Construction of Cupolas for Melting Pig-Iron, 161, 185, 232, 254, 299
Gover Mine, Cal.....283
Government Timber Suits and the Preservation of Forests.....364
Gowen, Franklin B.....150, 398, 487
Gowen, F. B., Argument of for Coxe Bros. & Co.....487
Graff, Bennett & Co.....336, 352
Graham, Founder of the Brooklyn Institute.....3
Granby Mg. & Sm. Co., Mo.....331
Grand Central Mine, Ariz.....440
Grand Central Mine, Sonora, Mex.....332
Grand Lake Coal Co., Pa.....172, 223
Grand Prize Mine, Idaho.....573
Grand Prize Mg. Co., Nev., 73, 82, 147, 173, 266, 356, 375, 465, 550, 552
Grand River C. & C. Co., Colo., 171, 243, 264, 306
Grand Trunk R. R. Co., Coal Contract.....197
Grand View Mg & Sm. Co., Colo.....50
Granite Mg. Co., Idaho.....96, 306
Granite Mountain Mg. Co., Martin vs., Mont.....307
Granite Mountain Mg. Co., Mont., 242, 264, 307, 331, 378, 397, 399, 463, 485
Grant, A. M.....376
Grant Sm. Co., Colo.....17
Graphic Mg. & Sm. Co. N. Mex.....376
Graphite Deposits of, in Clinton Co., Mo.....485
Graphophone Rights for the World Sold.....461
*Grate, the Hopcraft Furnace.....343
Gratuity Fund of Consolidated Stock & Petroleum Exchange, N. Y., Report of.....58
Grayling G. & S. Mg. Co., Mich...306, 441
Gray's Patent, a Device for the Adjustment, Horizontal and Vertical, of a Movable Roller of a Mill.....506
Gray's, Prof. Elisha, Telautograph....140
Graz Sudbahn Steel Works.....328
Great Eastern Cons Mg. & M. Co., Ariz.....527, 585
Great Eastern Mine, Sonora, Mex....332
Great Hopes Mine, Colo.....17, 171
Great Remance Gold Mg. Co., Rep. of Col.....195
Great West Mines, Nev.....596
Great Western Aluminum Sm. & Refg Co., Colo.....440
Great Western Steel Rolling Mill & Steel Wire Co., Mo.....16
Green Forest Mfg. & Land Impt. Co., Va.....71, 94
Green Mountain Cons. Mg. Co., Cal..353
Greene, Jr., Geo. S.....71
Greene, S. D., on Waterproof Electric Motors.....460
Greene's Electric Motor Patents.....215
Gregory—Bobtail Mg. Co., Colo., 374, 397, 528, 549, 573
Gregory Cons. Mg. Co., Mont.....508
Grier, T. G.....49
Griffin, G. W.....418
Griffith & Wedge Co., N. Y.....375
Griqualand West Diamond Co., Africa 551
Grizzly Bear and Gold Safe Mines, Dak.....485
Groesbeck, J. D.....192
Ground Hog Mine, Colo.....17, 171
Grover Mg. & M. Co., Cal.....122
Guanajuato, Mex., Mining News, 52, 195, 243, 332, 420
Guadalupe Hidalgo Mine, Hidalgo, Mex.....99
Guadalupe Mg. Co., Nuevo Leon, Mex. 286
Guadalupe Mine, Michoacan, Mex....286
Guadelupe Mine, Sonora, Mex.....98
Guerin's New Method for Preserving Milk.....216
Guerrero, Mex., Mining News.....98, 420
Guggenheim, Benj., on the Philadelphia Sm. and Refg. Co.....253
Guinea-Pig, the British.....3
Gun, Dynamite, Contract for Construction.....146
Gun Making, Need of Progress.....229
Gun, the Cast Steel.....122, 146
Gun, the Hotchkiss, the First Manufactured in America.....240
Gun, the Maxim Automatic.....594
Gun, Zalinsky Dynamite, Rights Sold to Russian Government.....461
Guston Mine, Colo.....374
Guyot, Dr. Arnold.....527
Gypsum, Consumption of in the U. S. 604
Gypsum, Discovery of in Florida.....604
Gypsum, Imports of.....604
Gypsum, Production of in Nova Scotia 74

H

Hacienda of Guadalupe, Hidalgo, Mex.....99
Hadden, Geo. W.....122
Haggin, J. B., 124, 151, 241, 263, 267, 439, 452, 473
Haggin, J. B., on Cost of Producing Copper.....452, 473
Hague, Arnold, on Soaping Geysers....524
Hague, James D.....146, 305, 396, 440, 548
Haile Gold Mg. Co., S. C.....464
Haines, Jones & Cadbury Co., Pa.....16
Hainsworth, Wm.....506
Hale & Norcross Mg. Co., Nev., 18, 73, 82, 97, 172, 173, 193, 220, 264, 266, 285, 307, 331, 354, 356, 376, 398, 463, 465, 508, 551, 552
Hale, S. W.....484
Half Moon Mine, Nev.....51
Hall, Charles E.....464
Hall, Edward.....71
Hall's, Wm., Transmission of Power Through a Bore Hole.....348
Hamilton, A. C.....307
Hamilton, H. N.....527
Hammond, H. W.....49
Hammond, I. B.....263, 507
Hammond, John Hays.....146, 352, 548
Hammond, the Engineers.....387
Hammond, Wilberforce B.....387
Hanauer Smelter, Utah.....51
Hancock I. Mg. Co., Mich.....307
Hand, F. C.....254, 329, 458
Hand, F. C., on the Southern Gold Field.....254, 458
Hannay's, J. B., New White Lead Process.....483
Hardenburgh Mine, Cal.....440
Harewood Mine, Brit. Col.....377
Harjes, John Henry.....439
Harker, O. H.....284
Harmony Mg. Co., Dak.....306
Harney Peak Tin M. Co., Dak., 18, 72, 219, 331, 352, 375, 462, 485, 508, 529, 573
Harpending, Asbury.....220, 530
Harper, J. M.....527
Harqua Hala Gold Field, Ariz....95, 275
Harrington, Jacob, Inventor of the Electric Brake.....352
Harris, John, on Mining Enterprise of China.....56
Harris, R. L.....461
Harrisburg Iron Co., Pa.....218
Harrisburg Roll. Mill Co., Pa.....192
Harrison, A. I.....19
Harrison, Benjamin.....218
Harrison Smelter, Colo.....50
Harrison Wire Works, Mo., Burned..439
Hart & Fleming Mine, Cal.....353
Hart, Prof. Edward, on Stetefeldt's Lixiviation of Silver Ores.....458
Hartery Cons. Mg. Co., Cal.....353
Hartsfeld Furnace and Refg. Co., Ky. 329
Harvey S. & I Co., N. Y.....309, 352, 355
Harvey's Mining Code on the A. B. C. or Self-Indexing Plan.....348
Hasloe Mine, Cal.....507
Hastings, Prof. C. S., Discovery in Telescope Lenses.....302
Hastings, Wm. D.....439
Hathaway Bondurant G. Mg. Co., Cal. 507
Haton, Prof., on Explosives.....394
Hatta Mg. Co., Mont.....485
Haupt, Prof. L. M., on Germany's Stock of Gold.....394
Haupt, Prof. L. M., on Permeability of Cement and Mortar.....393
Hauser, Gov. S. T.....124, 146, 173
Hausman, A., on Mines and Mining in Argentine Rep.....111
Hawkesbury Bridge, Aust.....569
Hayden, H. B.....595
Hayward Mg. Co.....244
Hazel Mine, Texas.....464
Head Center Mg. Co., Ariz.....240
Head, Jeremiah.....509
Heard, Jr., John, on Dry Concentration of Antimony Ore.....187
Heard, Jr., John, on Stetefeldt's Lixiviation of Silver Ores.....325
Heat Transmitted by Soda Solutions..394
Heating by Electricity.....216
Heavy Chemical Market Review Weekly
Heavy Chemicals, Statistics of.....533
Heckman, O. H.....353
Hecla Coke Co., Pa.....441
Hector Gold Mg. Co., Cal., 172, 195, 265, 284, 333, 462, 484, 531, 548
Hedges, Jas.....19
Hedges Sulphur Mine, Utah.....308
Helen Mine, Pa.....441
Helena & Livingston Sm. & Red. Co., Mont.....147, 173, 219, 573
Helena Mg. & Red. Co., Mont., 147, 172, 219, 508
Heley, Rosina.....125
Heller, Hirsh & Co. on Tariff on Potash Fertilizing Salts.....519
Hematite Iron Co., Va.....97
Hemp and Aloe Ropes, Strength of...483
Henderson Gas Furnace in Pa.....62
Henderson S. & Mfg. Co., Ala., 71, 170, 240, 484, 548
Hendrie, W. C.....373
Hengst Powder.....395
Henrich, Carl.....263
Henriett & Maid Cons. Mg. Co., Colo., 96, 507, 528, 573
Henrietta Mine, Colo.....171, 397, 549
Henry Bonnard Bronze Co.....461
Henry Clay Mine, Cal.....548
Henry, Jr., Col. William.....283
Hensley Sm. Co., Mont.....574
Henze, *et al* vs. R. W. Foote, *et al*....508
Hepworth Iron Works, N. Y.....305
Hermenegildo Galeana Mine, Guerrero, Mex.....420
Hermite Electrolytic Bleaching Process.....328
Hernsheim, L.....577
Heroult Aluminum Process, 121, 327, 386, 387
Heroult & Cowles Aluminum Process.....386, 387
Heroult Process in France.....327
Herschell Mine, Idaho.....463
Hersey Meter Co., Mass.....373
Hertz, H., on Electric Rays.....571
Hesse, Carl.....49
Hether Bell Mg. Claim, Utah.....486
Hewitt, Abram S.....263, 476
Hewitt, Abram S., on American Free Trade.....476
Hicks, John, U. S. Minister to Peru..329
Hidalgo Mining News Mex.....52, 98, 243
Hidalgo Smelting Wks., Chihuahua, Mex.....286
Highland Chemical Co., N. Y., 176, 384, 533
Highland Mine, Utah.....148
Highland Mg. Co., Dak.....241
Hildebrand on Silver and Lead Mining in the Shun States.....326
Hill, Charles L.....171
Hill, H. C.....19, 74
Hillebrand, A. R.....125
Hillman Colliery, Pa.....354
Hillyer, M. C.....263
Himrod, F. E.....397
Hinckley Locomotive Works.....329
Hinkle Charcoal Blast Furnace.....432
*Hinsdale's, Wm. R., Experiments on Compressing Steel.....456
Hinton, Francis.....439
*Hinton, R. J., on Irrigation in the Arid West.....6
Hints to Exporters.....217, 327, 328, 505
Historical Brick Kilns.....526
Hitchins, Owen.....123
Hites Cove Mine, Cal.....507
Hocking Valley R. R. & Judge Burke 508
Hoffmann, Ottokar, on Lixiviation of Silver Ore, 136, 157, 163, 189, 236, 251, 255, 364, 435, 498
Hoffmann, Ottokar, on Use of Cupric Chloride in Leaching.....364
Hogsett, Robt.....354
*Hoisting and Conveying Plant, Brown's.....8
Holden, E. R.....595
Holden Sm. Co., Colo.....17, 50, 95
*Holden's, James, Novel Oil Burner..481
Holley, Alex. L., Bronze Bust of.....583
Hollywood Mg. Co., Cal....22, 122, 283, 374, 462
Holmes Mg. Co., Nev., 82, 173, 266, 356, 376, 465, 508, 552
Home Coal Co., Utah.....51
Homestake Mg. Co., Dak., 17, 72, 78, 123, 171, 196, 309, 374, 377, 399, 463, 465, 485, 552, 595, 597
Hondo Mine, Coahuila, Mex.....332
Honduras G. Placer Co., Hond.....420
Honduras Mining News..220, 243, 354, 420, 509, 530, 596
*Hopcraft's Underfeeding Furnace Grate.....343
Hope Mg. Co., Mont.....307
Hopkins Coal Co., Wyo.....52
*Hopkinson, Dr. I., on Recalesence of Iron.....435
Horn Silver Mg. Co., Utah, 19, 74, 124, 196, 244, 257, 333, 354, 355, 376, 397, 399, 420, 421, 531
Horsfall, H. A., on Gold Discoveries in Batopilas, Dis. Mex.....5
Horsford, E. N.....71
Hortense Mg. Co., Colo.....244
Hot Springs Mine, N. M.....97
Hotchkiss Guns, the First Manufactured in America.....240
Hotchkiss Ordnance Co.....49
Houghton Sandstone Co., Pa.....464
Houses, Californian Importation of...14
*House's, Royal E. Telephone.....326
Houses, Terra Cotta Lumber.....328
*Houses, the Ducker Portable.....115
How an Axe is Made.....112
How to Open New Markets.....2
Howard, Chas. M.....97
Howell, Capt. John A.....49
Howell's Torpedoes and Launching Apparatus.....49
*Howe's Metallurgy of Steel, 67, 91, 142, 167, 238, 261, 281, 303, 349, 371, 436; *Supplement*, 223, 231, 239, 247, 255
Howland Disintegrating Riffles, Failure of, in Practical Use.....419
Huantajaya Tunnel, Chili.....442
Hub Gold Mg. Co., Prospectus.....230
Hub Wire, Idaho.....573
Hubert Mg. Co., Colo.....123, 330
Hubbard, Chauncey M.....461
Hubbard & Co.....352
Hubbell, Hon. Jay A.....508
Hudson River I. & Ore Co., N. Y.....240
Hudson River Tunnel.....396, 546
Hudson's Bay R. R.....212
Hughes, D. T.....551
Hughes, G.....170
Hughes, Gov., on Mining Swindles in Arkansas.....274
Hull, Azel B.....263
Hull, George H. & Co.....106, 489
Hull, George H., and the Pig-iron Warrant Scheme.....106
Hull, Henry.....123
Humboldt Marsh, Nev.....51
Humboldt Mine, Colo.....50
Humboldt Mg. Co., Ltd., N. Mex.....419
Hungarian Mining News.....243
Hunt & Broad Top Mountain R. R. & C. Co., Pa.....148, 597
Hunt, Dr. T. Sterry.....194
Hunt, Wm. H.....594
Hunter & Willis.....373
Hunter Mine, Idaho.....440
Hunter Park Mg. Co., Colo.....331
Huron Mg. Co., Mich., 51, 124, 147, 171, 242, 354
Hurricane Granite Co. and Booth Bros.' Combination.....170
Hurst, C. W., Co., Staten Island.....352
Hussey's, M. L., Electric Watches and Clocks.....417
Hutchings, W. M.....4, 192
Hutchings, W. M., on Metamorphism in Rocks.....4
Hutchinson, James.....352
Hydraulic Lift, Proposed.....410
Hydraulic Salt Forcing Co. vs. Warsaw Salt Co.....71
Hydrogen Occluded in Steel.....435
Hydrogen Peroxide Used for Determining Chrome, Manganese and Iron.....141
Hyman, D. M. vs. D. R. Brown, Y. C. Bacter, et al., Colo.....123

I

Ibarra Mines, Lower Cal., Mex.....243
Ice-Crushing Steamboat.....297
Ice in Shafts, the Removal of.....453
*Ice-Making Machinery.....503
Ida May Mine Colo.....264, 330
Idaho Mine, Colo.....95
Idaho Mg. Co., Cal.....528, 573
Idado Mg. Co., Idaho.....353
Idaho Mining News, 51, 96, 123, 193, 219, 241, 264, 306, 331, 353, 375, 397, 440, 463, 508, 529, 550, 573, 595
Iguana Mg. Co., Nuevo Leon, Mex....286
Ilex G. Mg. Co., Ltd., Cal.....528
Illinois, Coal Interests of.....171
Illinois Coal Miners, Wages of, 419, 463, 485, 508, 529
Illinois, Fossil Fuels and their Exploitation.....477
Illinois Mining News, 123, 171, 353, 419, 463, 485, 508, 529, 550
Illinois Mg. & M. Co., N. Mex.....354
Illinois Steel Co., Ill.....333, 439
Imperial Cons. Mg. Co., Nev., 82, 173, 266, 356, 463, 465, 552
Import Duties in Colombia.....417
Importation of Houses, Cal.....14
Importation of Soda.....55
Importers, Points to.....411
Imports and Exports of Copper in 1888 32
Imports and Exports of Lead since 1867.....34
Imports and Exports of Metals, New York.....Weekly
Imports and Exports of Quicksilver from England.....577
Imports and Exports of Zinc since 1867.....35
Imports of Brimstone.....450
Imports of Cement.....272
Imports of Chemicals.....272
Imports of Clays.....272
Imports of Coal, Vancouver, Brit. Col. 308

Imports of Coke, San Francisco..... 308
Imports of Copper of U. S..... 101
Imports of Lead, U. S..... 101
Imports of Marble & Stone..... 272
Imports of Phosphates..... 272
Imports of Quicksilver..... 488
Imports of Zinc, U. S..... 101
Improvements in the City of Mex 119
Incorporation Laws of Colorado, Modification of..... 263
Independence Mine, Idaho..... 463
Independence Mg. Co., Nev., 82, 266, 356, 465, 552
Independent Mg. Claim, Dak..... 485
Index to Volume XLVI..... 133
India, Coal Fields of..... 543
India, Diamond Fields of..... 543
India, Forest Conservancy in..... 215
India, Geological Survey of..... 543
India Irrigation Dept..... 416
India Mining News..... 125
India Rubber Pavement..... 10
India Rubber Supply..... 216
India, Trade Marks in..... 15
Indian Coin, Old..... 14
Indian Crucible Steel Manufacture... 322
Indian Railroads..... 460
Indian Reservations to Lease Mining Lands..... 192
Indian Terr. Mining Lands, Leasing.. 96
Indian Terr. Mining News..... 96
Indiana Coal Miners, Wages of., 96, 146, 263, 306, 440, 595
Indiana Limestone for Building Purposes..... 228
Indiana Mg. Claim, Dak..... 485
Indiana Mining News, 96, 171, 241, 284, 306, 397, 419, 440, 595
Indiana, Natural Gas not to be taken out of..... 241
Indiana Society of C. Engineers and Surveyors..... 16
Indicator, Fire Damp, and Pa. Legislation..... 285
Industrial Notes..... Weekly
Inez G. Mg. Co., Cal.....50, 195, 218
Inez Mg Co , Idaho..... 306
Influence of High Prices in Copper on the Brass Trade..... 61
*Ingersoll-Sergeant Air Compressors, 432, *504
*Ingersoll-Sergeant Coal Mining Machine..... 120
Ingersoll-Sergeant Rock Drill Co., N. Y., 94, 120, 221, 263, 298, 352, 432, 439, 484, *504
Ingersoll-Sergeant Rock Drill Co.'s Challenge..... 298
Ingram Mg. & M. Co., Colo..... 507
Inland Marine Power Co..... 122
Inorganic Coal and Limestone in an Electro-Chemical World..... 191
Inorganic Origin of Coal and Limestone..... 183
Institute, Iron & Steel, of Great Britain, Meeting of..... 476
Institute of Mining Engineers, 16, 170, 181, 206, 215, 230, 263, 329, 461, 584
Institution of Civil Engineers..... 572
Institution of Civil Engineers in Eng. Mining Section, Establishment of... 305
Institute of Electrical Engineers, American..... 484, 572
Institute, the Brooklyn 474
Insulators, Quartz as..... 435
International Boiler Co., Ltd. 330
International Co..... 439
International Electric Welding Co., Mass..... 594
International Labor Congress..... 548
International Mg. Co., Lower Cal., Mex..... 286, 551
International Mg. & Metallurgical Congress..... 329, 548
Inter-Ocean Mg. & Mill. Co., Colo.... 146
Inter-state Commerce Act....369, 391, 423
Inter-state Commerce Commission in Coxe Case..... 53, 487, 576
Inter-state Convention of Miners & Mine Operators at Indianapolis.... 146
Inventor of the Sewing Machine..... 324
Investments in Gas in England..... 302
Investments in Mexico, Foreign..... 564
Iodide Process for Determining Copper 48
Iowa Coal Miners, Wages of..... 96
Iowa Mining News..... 18, 96, 353
Iridium..... 166, 587
Iron Age in Norway, Relicts of..... 435
Iron, American Pig, Prices of..... 37
Iron & Coal Industries of Ala. in 1888. 47
Iron & Land Co., of Minnesota, Ltd., Minn..... 307
Iron and Soda in Southern Russia.... 280
Iron & Steel Analysis, International Standards for..... 480
Iron & Steel Ass., the American.77,106, 393
Iron & Steel Institute of Great Brit., Meeting of..... 476
Iron & Steel Mfr's Ass..... 396
Iron and Steel, Price of, in December for Three Years..... 58
Iron and Steel, Prices of at Louisville, New York, Pittsburg..... Weekly
Iron & Steel Production in 1888...379, 393
Iron & Steel Workers' Amalg. Ass., 305, 373, 396, 484, 527, 572
Iron and Steel Workers, Wages of, in Pa..... 484
Iron Castings, Influence of Aluminum 396
Iron Cliffs Co., Mich..... 485
Iron Deposits near Hartville, Wyo... 283
Iron Determined by Hydrogen Peroxide..... 141
Iron Dollar Mine, Idaho..... 96
Iron Foundries in China..... 320
Iron Gate Land & Imp. Co. Va...376, 506
Iron Hill Cons. Mg. Co., Colo..... 264
Iron Hill Mg. Co., Dak.....463, 529
Iron King Mine, Mich..... 550
Iron Land Co., Minn..... 219
Iron Market Review for 1888..... 36
Iron Market Reviews, Louisville, New York, Philadelphia, Pittsburg..Weekly
Iron Mask Mine, Colo.....17, 171, 528
Iron, Metallurgy of Ancient..... 546
Iron Mines of Cuba..... 285
Iron Mines of Lincoln Co., Nev., Development of..... 529
Iron Mines of N. Mex..... 97
Iron Ore Deposits near Lock Haven, Pa..... 596
Iron Ore Deposits of Oklahoma, Ter.. 530
Iron Ore Deposits, Wolverine Dist., Nev..... 124
Iron Ore from Lake Ports, Freight on. 488
Iron Ore in Burmah..... 191
Iron Ore Lake Superior, Prices of.380, 402, 445, 489, 511, 533, 577, 599
Iron Ore Mines, Dela, Development of..... 123
Iron Ores, Production of in 1888.....28, 36
Iron Ore Production, Lake Superior Mines for 1888..... 146
Iron Ore Shipments from Ashland, Wis.....461, 489, 507, 527, 548, 573, 594
Iron Ore Shipments from Escanaba, Mich.....461, 489, 507, 527, 548, 573, 594
Iron Ore Shipments from Gogebic Dist.....461, 489, 507, 527, 548, 573, 594
Iron Ore Shipments from Lake Superior Iron Mines, Mich.....461, 489, 507, 527, 548, 573, 594
Iron Ore Shipments from Marquette Dist., Mich..461, 489, 507, 527, 548, 573, 594
Iron Ore Shipments from Menominee Dist., Minn.461, 489, 507, 527, 548. 573, 594
Iron Ore Shipments from Vermillion, 461, 489, 507, 527, 548, 573, 594
Iron Properties and Stocks, Gogebic.. 42
*Iron, Recalescence of..... 435
Iron, Reduced Freight Rates on, from Cleveland..... 599
Iron Semi-Centennial, the Anthracite..... 134
Iron Silver Mg. Co., Colo., 17, 96, 240, 244, 330, 353, 374
Iron Silver Mg. Co. vs. Mike & Starr G. and S. Mg. Co., Colo..... 330
Iron, Structural 37
Iron, Three Ways of Coppering..... 435
Iron Viaducts for Highways..... 571
Iron Workers, Strike of in Pa..... 572
Irondale Iron Works, Port Townsend, Brit. Col..... 530
Irondale Iron Works, Wash. Terr.... 309
Ironton Furnace, N. Y..... 283
Iroquois Copper Co., Mich..... 241
*Irrigation Appliances..... 88, 323
*Irrigation, Centrifugal Pumps for... 88
Irrigation in India..... 416
*Irrigation of Arid Lands..... 6
Irrigation Scheme in Nev..... 284
Irrigation Unit, the Acre-Foot..... 416
Irvin's Peak Mg. Co., Colo..... 306
Italian Experiments on Castor and Olive Oils for Lubrication..... 302
Italian Imports of Machinery..... 118
Italy, Sulphur Production in 1888..... 593
I. X. L. Mg. Co., Colo..... 264

J

Jackson Iron Co., Mich..... 439
Jackson Mines, Pa..... 97
Jacobson, Sam'l..... 329
Jagger Iron Works..... 192
Jalisco, Mex., Mining News, 243, 332, 421, 441
Janin, Louis, Jr.....1, 49, 52, 170, 594
Janin, Louis, Jr., on Lixiviation by Cyanide of Potassium..... 1
Japan, American Locomotives in. . 138
Japan and Mexico, New Treaty..... 526
Japan, Progress of Science and Technology in..... 258
Japanese as Miners and Machinists.. 363
Jaussen, M. on Oxygen in the Sun... 546
Jaragua Iron Co., Cuba..... 122
Jarman, J. L., & McCalel, J. F., On Cuprite in Copper Slag..... 141
Jarrett, John..... 461
Jay Hawk Mg. Co., Ltd., Mont....147, 529
J. D. Reymert Mg. Co., Ariz., 352, 494, 594
J. D. W. on Lady Franklin Mine, N. Mex..... 430
Jefferson C. & I. Co., Ohio..... 192
Jefferson Gas Co., Pa..... 19
Jeffrey Mfg. Co., Ohio.....527, 548
Jellico Coal Mines, Tenn..... 596
Jennie Bell Mg. & M. Co., Colo..... 147
Jennings, Hennen.....464, 594
Jenny Lind Mine, Ariz..... 507
Jessie Benton Mine, Ariz..... 17
Jesus Maria Mine, Hidalgo, Mex..... 243
Jewelry Sent to Paris can Return Without Duty..... 283
J. F. S. on Arizona Copper Practice.. 519
Jim Fisk Mine, Utah 242
J. J. M. on Mexican Ore Question..... 563
Joggins Coal Mg. Assn., Nova Scotia. 530
Johnstone, A., on Detection of Antimony in Minerals..... 542
Johnson, John G., Argument of, for Lehigh Valley R. R. Co..... 487
Johnson, Royal A..... 572
Johnson, Walter, on Weight of Anthracite..... 1
*Johnstown Disaster.....*517, 518, *520
Joliet Steel Co., Ill., 106, 246, 268, 289, 333, 396, 418, 439
Jones, Evan R., on the British Shipping Trade..... 251
Jones, John C..... 49
Jones, John P., 75, 197, 288, 400, 422, 487, 598
Jones, Samuel L..... 506
Joplin Z. & S. Works, Mo..... 373
Jo Reynolds Mine, Colo..... 219
Josephine Mg. Co. Ltd., Cal....26, 126, 397, 573
Journalism and Theology..... 352
Journal of the I. & S. Inst..... 121
Juan Bran Mine, Vera Cruz, Mex.... 286
Julia Mg. Co., Nev.....82, 173, 356, 465, 552
Julien Electric Co., N. Y., 66, 181, 218, 240, 283, 305, 370
Julien Elec. Co. vs. Electrical Accumulator Co..... 280
Julien Electric Storage Batteries, 66, 181, 370
Julius Pam Diamond..... 302
Junction Mg Co., Idaho..... 306
Justice Mg. Co., Nev., 18, 73, 82, 124, 172, 220, 266, 331, 354, 374, 398, 463, 465, 552
Justice in Protection, Moderation and 562

K

Kakagon Mg. Co., Wis.....98, 421
Kalakutski, Major-Gen'l. Death of... 218
Kalbaugh, Alexander..... 354
Kalbfleisch Sons, Martin..... 122
Kansas City Mg. Stock Quotations, 421, 443, 487, 510, 531, 575
Kansas City Sm. & Refg. Co..... 489
Kansas Mining News..... 375
Kansas Z. & L. Co., Ark..... 507
Katahdin Charcoal Iron Co., Me..... 330
Katte, Walter..... 71
Kearsage Mg. Co , Mich., 18, 147, 171, 242, 354
Keating, A. F..... 396
Keating, R. P..... 307
Kedzie, G. E..... 573
Keep, W. J..... 396
Kehley Run Colliery, Pa..... 51
Keighley, F. C..... 527
Keith, J. G..... 375
Keith's Chlorination Works, Dak . . 485
Kekionga Mine, Colo..... 95
Keller, Herman..... 218
Kellogg, Chas..... 170
Kellograph, The American Mining & Stock Code..... 395
Kelly, Frank M..... 122
Kelly, J. E., Panel of 6th Cavalry, Casting of..... 543
Kensington, F..... 509
Kentucky Coal Production..... 237
Kentucky Mg. Co., Nev., 82, 173, 266, 356, 465, 552
Kentucky Mining News..... 375, 508
Kentucky Oil and Gas Co., Ky..... 594
Kerl, Prof. Bruno, on Stetefeldt's Lixiviation of Silver Ores..... 301
Keuffel & Esser Co..... 240
Keyes Mg. Co., Nev.....173, 398
Keynote Mg. Group, Ltd. Cal..... 549
Keystone Bridge Co..... 439
Keystone Chlorination Works, Dak., 375, 573
Keystone Mine, Cal...122, 284, 374, 462, 548
Keystone Mine, Utah..... 420
Keystone Placer Co., Colo..... 387
Keystone Roll. Mill, Pa.....484, 548
Kidder, Dr. J. H..... 352
Killebrew, J. B., on Coal Fields of Va. 64, 134
*Kiln, the Claus Sulphur..... 118
Kilns, Historical Brick..... 526
Kilworth Mg. Co.. Mich..... 284
Kimball, Dr. J. P., on Production of Gold and Silver in 1888..... 540
Kimball, Dr. J. P., Report of the Mint..... 496
Kimberley Central Diamond Co., Africa..... 551
Kincaid, J. E..... 240
*King *et al* vs. the Amy. & Silversmith Mg Co. Case..... 84
Kingfisher Mine, Colo..... 549
Kirby, E. P.....192, 218, 263
Kirchhoff, Chas. Jr.....16, 157, 175, 341
Kirchhoff, Chas Jr., on Copper Production in the U. S..... 157
Kirchhoff, Chas. Jr., on Lead Production in the U. S. in 1888 341
Kirkegard, G..... 16
Kirkland, C., on Origin and Formation of Porcupine Vein, Ont..... 347
Kleupfer Bros. vs. the Eureka Cons. Mg. Co., Nev..... 147
Kline, D. C..... .49, 52, 170, 309, 439
Knights of Labor.....396, 572
Knights of Labor, Machinery Constructors Nat. Convention..... 396
Knoblauch, J. C. C..... 122
Knox County Lime Ass.....384, 450
Kohinoor & Donaldson Mg. Co., Colo. 264
Kolbeck, Joe M..... 220
Kootenay Sm. and Trading Syndicate, Ltd. Brit. Col..... 530
Kreichbaum Mine Colo..... 95
Kruse, John A. & Co., Ill..... 71
Kruss', Prof. Gerhard, Alleged Decomposition of Nickel and Cobalt, 87, 183, 301, 526
Krüss & Schmidt on Gnomium..... 526
Kühlow's, Copy from the E. & M. J.. 329
Kunz, Geo. F.....305, 328, 373
Kunz, George F., on Yttria Minerals. 328
Kuss, M. H., on the Almaden Mines of Spain..... 10

L

La Barranca Mine, Sonora, Mex..... 442
La Blanca Mine, Nuevo Leon, Mex... 52
Laboratory Guide in Chemical Analysis..... 302
Labor, the Brotherhood of United.... 572
Labor Congress, the International ... 548
Laborers, Swedish, brought from Chicago to Charleston, S. C..... 97
Labor Organizations of the U. S., Meeting of, in France..... 506
Labor Statistics, Convention of Chiefs and Commissioners of..... 572
La California Mine, Sonora, Mex..... 442
La Caridad Mine, Spain..... 509
La Cienaga Mine, Sonora, Mex..... 442
Lackawanna C. & I. Co., Pa., 50, 106, 148, 352, 511, 533
La Colorado Mine, Sonora, Mex..... 442
Lacrosse Mg. Co., Colo 465
Ladenburg, Thalmann & Co..... 122
La Dura Mine, Sonora, Mex..... 442
Lady Washington Mg. Co., Ariz., 82, 173, 266, 356, 465, 552
Lady Franklin Mine, N. Mex..... 430
Lafayette Nat. Gas Co., Ind..... 284
Lake Coal Dealers' Ass..... 222
Lake Freights on Ore..... 174
Lake Superior Copper Co.'s Production.....30, 147, 171, 242, 354, 550
Lake Superior Iron Co., Mich., 96, 146, 242
Lake Superior, Mich., Prices of Iron Ore.....380, 402, 445, 499, 511, 533, 577, 599
Lake Superior Mines, Mich., Iron Ore Shipments from, 461, 489, 507, 527, 548, 573, 594
Lake Superior Mines, Mich., Iron Ore, Production for 1888..... 146
Lake Superior Ship Canal R. R. & I. Co., Mich..... 508
La Luz Mine, Mex..... 135
La Luz Pachuquilla Mine, Hidalgo, Mex..... 99, 243
Lamartine Mine, Colo,.....284, 330, 397
Land Decision, Important, Arizona... 260
Land Office Decision on Timber Mg. Claims..... 497
Landsdowne Bridge, India..... 481
Lands of Strait of Canso, N. S., Imp't. 377
Langdon-Davies' Phonophone..... 392
Langley, Prof. J. W., on Heroult Proces s..... 387
La Paz Mine, San Luis Potosi, Mex.. 442
Lapidary for Cutting and Polishing Slabs of Agate and Topaz at Trinidad, Colo..... 595
La Rica Mine, Rep. of Col.....309, 551
Larroqués, F., Experiments on Electric Deterioration of Copper Wire by Electric Currents..... 166
Las Amarillas Mine, Sonora, Mex..... 442
Las Goijas Mine, Sonora, Mex..... 98
Last Chance Mine, Colo.....171, 549
Last Chance Mine, Utah..... 52
Last Dollar Mine, Colo..... 374
La Trinidad Co., Ltd., Mexico..... 530
La Union Mine, Guanajuato, Mex 52
Laureau, L. G..... 146
Lavigne de Germond, Cork Springs for Cars..... 216
Lavignine, Prof.....354, 421
Law, Proposed Change in U. S. Mining 90
Law Regulating the Use of Water in Placer Mining in California..... 66
Lawrence Colliery, Pa..... 51
Lawton, C. D..... 94
Leaching Silver Ores, Aaron..434, 498, 563
Leaching Silver Ores by Cupric Chloride.....275, 364, 434, 498
Lead Exports from the U. S..... 127
Lead Imports of U. S..... 101
Lead Imports and Exports since 1867.. 34
Lead and Lead Oxide Production of Germany..... 460
Lead Market in 1888..... 34
Lead Market Report..... Weekly
Lead Market Review..... Weekly
Lead Market, the London in 1888..... 35
Lead Mines in Russia..... 260
Lead Mines of Mexico..... 52
Lead Ore Question, the Mexican, 430, 453, 473, 475, 541, 543, 563, 583, 585
Lead Process, the Hannay..... 483
Lead Production in 1888, 1, 28, 33, 50, 59, 341
Lead Production in Colo. in 1888..... 50
Lead Production of Idaho in 1888..... 51
Lead Production of Utah..... 51
Lead and Silver Ores in Russia..... 191
Lead in Silver-Lead Ores, Duty on, 2, 76, 430, 453, 473, 475, 541, 563, 583, 585
Lead, Stock of, in 1888..... 33
Lead Trust.....266, 487, 553, 576
Leadville. Colo., Ore Market, 74, 221, 286, 355, 442, 574
Leadville, Colo., Sinking a Deep Shaft at.....284, 397
Leadville, Con. Mg. Co., Colo., 96, 219, 397, 462, 485, 595
Leadville Mines, Ltd., Colo..... 96
Leadville Tunnel Co., Colo..... 528
Leandrana G. Mg. Co., Mex..... 19
Leather Belting Mfrers.' Ass..... 461
Le Chatelier on Dissociation of Carbolic Acid..... 184
Leckie, R. G..... 530
Leech Mill, the Old, at Magnolia, Colo..... 353
Leeds, Chas. J..... 71
Lee Mine, Va..... 530
Lee Mg. Claim, Dak..... 485
Leffermann, Henry..... 71
Legal Tender Mine, Dak..... 375
Le Grand Mine, Dak..... 375
Lehigh Car Mfg. Co., Pa..... 122
Lehigh C. & Nav. Co., Pa..... 220
Lehigh Luzerne Coal Co., Pa..... 73
Lehigh Valley Coal Co., Pa., 73, 124, 354, 554
Lehigh Valley R.R. Co., Pa., 19, 53, 71, 73, 100, 150, 174, 222, 245, 288, 334. 487, 576
Lehigh Valley R. R. Co. & Coxe Bros. & Co., 53, 100, 150, 174, 222, 288, 334, 487, 576
Lehigh & Wilkes-Barre C. Co., Pa., 398, 530, 551, 574
Lehigh Z. & I. Co., Pa.....330, 373
Lela Mg. Co., Ariz.....484, 594
Lent, Wm. M..... 352
Lenses, Discovery in Telescope 302
Lepidolite..... 385
Lesseps, M. de..... 419
*Level, Brandis' Improved Engineer's 322
Lever, Charles..... 600
Levey. S. S., on Taylor Plumas Mill & Mg Co., Cal.....342, 386
Lewis Foundry & Machine Co., Pa... 373
Lewis, James & Son, Copper Report, 114, 175, 554
Lewisburg Nail Works, Pa..... 283
Lexington Mg Co.. Mont..219, 284, 441, 529
Lezsyncsky, Julius..... 195
Lichstenstein, Paul..... 122
Lieber's Universal Telegraph Cipher. 94
Lien Law, the Mechanic's, Test Case in Mont..... 18
Lift, Proposed Hydraulic..... 410
Life-Saving Congress in Paris 429
Light Locomotives..... 395
Light Wanted Underground..... 60
Lightenberger, Wm., on Electrolytic Extraction of Sodium and Chlorine from Sea Salt..... 61
Lighting, a New Method of Electric.. 66
Lightner, Joel F.....170, 240
Lightning Striker Mine, Colo..... 353

Lillian Mg Co., Colo..... 147
Lima Oil Co., O..... 78
Lima, O. Oil Field.....97, 220, 222, 356, 376, 378, 508, 553
Lima, Ohio, Oil Piping to Cincinnati, O..... 97
Lima, Ohio, Oil Process for Refining.. 356
Lima Oil, Use of Crude Under Furnaces in Michigan..... 94
Lime Industry of Rockland, Me., 384, 450, 472
Lime Industry of St. John, N. B...421, 450
Lime and Silica in Mortar, Chemical Combination of..... 260
Limestone and Coal, Inorganic Origin 183
Limestone Quarrymen, Pa., Strike of. 124
Lincoln Co., Nev., Iron Mines, Development of..... 529
Liquefying Gases, Electrolytic Method 216
Liquid Metal, Rolling..... 483
Lithium and its Value..... 166
Little Annie Claim, Colo..... 374
Little Chief Mg. Co., Colo., 17, 149, 196, 219, 355, 440, 507, 528
Little Dandy Mine, Mont..... 463
Little Lottie Mine, Colo..... 284
Little Nellie Mine, Cal..... 353
Little Pittsburg Mine, Cal..... 219
Little Pittsburg Mg. Co., Colo., 149, 196, 219, 264, 528, 531
Little Sliver Mg. Co., Colo..... 96
Little Whale Mine, Dak..... 375
Livermore, Mr..... 439
Liverpool Co., Ont..... 464
Livingstone, James..... 71
Lixiviation Agent, Use of Cyanide of Potassium as a..... 1
Lixiviation of Argentiferous Blende & Galena Ores..136, 157, 163, 189, 236, 251, 255, 319, 498
Lixiviation of Gold Ores.....346, 366, 388
Lixiviation of Silver-Lead Ores, Daggett..... 319
Lixiviation of Silver Ores, Hoffmann's, 136, 157, 163, 189, 286, 251, 255, 364, 435, 498
Lixiviation of Silver Ores, Stetefeldt's, 301, 319, 325, 348, 365, 416, 435, 458, 482, 505
Lixiviation of Silver, Zinc, Lead Ores 236
Llanos Mine, Sonora, Mex..... 442
L. M. on Lixiviation..... 541
Localities in which Manganese Occurs in the U. S..... 49
Lockhart, Wm. L.....461, 506
Locomotive Engineers, Brotherhood.. 594
Locomotive, the First Built on Staten Island..... 352
Locomotive Mg. Co., Ariz., 173, 356, 465, 552, 594
Locomotive Mg. Co., Nev.....82, 266
Locomotives, Economy of Compound. 429
Locomotives in Japan, American..... 138
Locomotives, Output of by Baldwin Works in 1888..... 16
Locomotives, Prices of..... 417
Locust Spring Colliery, Pa..... 51
Lodra Mine, Sonora, Mex..... 98
Logan Mine, Dak..... 375
Logging by Steam Power..... 115
Logs, Export Duty on, from Canada. 122
Lomonossoff's New Explosive..... 186
London Antimony Market in 1888..... 36
London Copper Market in 1888..... 32
London Electric Supply Corporation. 363
London Lead Market in 1888..... 35
London Method of Floating Mines, 87, 251
London Mine Gambling..... 251
London Mg. Stock Market Quotations, Weekly
London & South African Exploration Co., Africa..... 551
London Spelter Market in 1888..... 35
London Tin Market in 1888..... 36
Lone Pine Mine, Mont..... 529
Long, Col. Richard..... 329
Longyear, J. W..... 146
Lookout Mines, Dak.....463, 485
Loomis, Thos.. & Co..... 223
Lord's Boiler Compound, Litigation.. 572
Loreto Mine, Michoacan, Mex..... 286
Los Angeles Mg. and Sm. Co., Hond., 243, 509
Los Angeles RR..... 464
Los Boujas Placer Mg. Co., Rep. of Col..... 551
Los Campos Mine, Zacatecas, Mex... 509
Los Nuevos Minas de Santa Maria G. & S. Mg. Co., Mex 220, 530
Louis, Henry..... 192
Louisville Iron Market Review..Weekly
Louisville Bridge and Iron Co., Ky... 352
Loumeyer, M. H..... 52
Lounsbery, H. R..... 352
Low Process for Zinc Ores..... 17
Lowe Mfg. Co., Pa..... 170
Lowe, Prof. T. S. C..... 170
Lower California, Mex., Mining News, 98, 194, 243, 265, 286, 441, 551
Louisville Coal Mg. Co., Colo..123, 240, 528
*Lower Cal., Santa Clara Gold Field, 265, *276, 309, 441
Lowrey, Grosvenor, on Heroult & Cowles' Aluminum Process..... 387
Lubrication by Air Compressors..... 385
Lubrication, Castor vs. Olive Oil..... 302
Luckey Mine, N. M..... 595
Lucky Bart Mine, Cal..... 353
Lucky Strike Mine, Idaho..... 96
Lucy Furnace No. 1, Pa., Successful Blast of..... 506
Ludington Mine, Mich..... 375
Lukens Roll. Mill Co., Pa..... 125
Lumber Houses, Terra Cotta..... 328
Lumber, Mexican Mahogany..... 327
Lumner, Dr., on Photometers..... 217
Lyle, William..... 95
Lynch, Jeremiah..... 461
Lyons, Charles..... 463
Lysynscky, Julius..... 172

M

Machinery Constructors' Nat. Conven. 396
Machinery, Exports of American..... 204
Machinery, Field in Africa for American..... 133
Machinery for Praying..... 327
Machinery for Riveting Stove Pipe... 66
Machinery for Russia..... 218
Machinery, Italian Imports of..... 118
Machorra Mine, Michoacan, Mex..... 286
Macpherson, John A.....905, 548
Macy, Arthur, on Silver King Mine, Ariz..... 86
Madden, Prof. W. J..... 550
Maggie Mg. Co., Dak..... 50
Magin, Dr..... 240
Maginnis Mg. Co., Mont..... 529
Magnetic Iron Ore Mines, Brit. Col. 309, 5 0
*Magnetic Separator, the Buchanan, *542, 563, 585
Magnetic Separator, the Edison, 171, 181, 305, 331
Maid of Erin Mine, Colo.....374, 507
Maid of the Mist Silver Mg. Co., Colo. 241
Maiden Creek Iron Co., Pa..... 263
Maine Mining News..... 147, 508
Major Budd G. & S. Mg. Co., Mont., 242, 331, 398, 573
Malanoche Mg. Co., Mex..... 220
Malaroc on Extension Metric System 408
Malay Peninsula, Tin in..... 48
Malleable Bronze..... 435
Malpaso Mine, Rep. of Col.....309, 551
Mammoth Copperopolis, Utah..... 420
Mammoth Gold Mines, Ltd., Ariz.... 507
Mammoth Mg. Co., Utah.....420, 441
Manganese Deposits of Transcaucasia..... 486
Manganese Deposits in the U. S..... 49
Manganese Determination, Colorimetric..... 460
Manganese Determined by Hydrogen Peroxide..... 141
Manganese Determination by Volumetric Method..... 394
Manganese Iron Ore Imported from Turkey..... 396
Manganese Mines of Cuba..... 285
Manganese, Preparation of Metallic.. 593
Manhattan Brass Co., N. Y..... 305
Manhattan Elec. Light Co., N.Y., and the Westinghouse Elec. Co., Pa..... 373
Manhattan Mill, Vt..... 464
Manhattan Mg. Co., Nev..... 18
Man-Hole Explosion and Electrical Engineering..... 296
Mann-Arrington Gold Mine, N. C..... 308
Mannesmann's Steel Wire Fly Wheels, 522
Manning, Maxwell & Moore..... 218
Mansfield, George W., on the Electric Motor in Mining Operations..... 8
Mantius, W. E..... 49
Manual of American Works..... 436
Manufacturers of Iron and Steel, Ass.. 506
Manville Smelter, Colo..... 50
Manzanilla Mine, Chiapas, Mex..... 243
M. A. P. Mg. Co..... 397
Map of English, Dutch and French Guiana..... 436
Map of Wythe County, Virginia, with part of Pulaski County, by C. R. Boyd..... 48
Maps Received..... 48, 280, 328, 436
Marble and Stone, Imports of..... 272
Marcia Cons. Mg. Co., Colo..... 147
Marichal, Arthur, on Permeability of Cement..... 393
Marine Railway of Chignecto..... 342
Mariposa Grant Mine, Cal..... 507
Mariposa Mine, Nicaragua..... 377
Market, Copper, in 1888..... 32
Markets, How to Open New..... 2
Market, Lead, in 1888..... 34
Markwald & Co..... 311
Marmon Patent, a Device for Loosening the Bolt of the Countershaft..... 506
Marquette Dist., Mich., Iron Ore Production for 1888..... 146
Marquette Dist., Mich., Iron Ore Shipments...461, 489, 507, 527, 548, 573, 594
Mars Mine, Ariz..... 507
Mars, the Canals of..... 395
Maisac Mill, Utah, Selling Sulphides. 376
Marsh, Prof. O. C..... 548
Marshall Cons. Coal Mg. Co., Colo., 17, 305, 419
Martin Process & Chemical Co., N. Y. 82
Martin vs. Granite Mountain Mg. Co., Mont..... 307
Marvin, Charles, on the Coming Oil Age..... 216
Marvin & Co.'s Combined Fresh Water, Brine and Gas Well..... 11
Mary Foster Mg. Co., Colo.....171, 306, 353
Mary Lee C. and RR. Co., Ala..... 218
Mary Murphy Mg. Co., Colo..... 146
Maryland Coal Co.....123, 219, 378
Maseulli, Pablo..... 132
Mason, Capt. Thos..... 95
Mason Regulator Co., Mass..... 49
Mason & Barry Mg. Co., Spain, Dividend..... 421
Mass Mine, Mich..... 419
Massachusetts Agricultural Experiment Station..... 571
Massachusetts Copper Mine, Utah..... 52
Massachusetts Smelter, Pueblo, Colo. 241
Massey Cons. Mg. Co., Nev..... 124
Massick & Crook Hot-Blast Fire-Brick Stoves, Introduction of, in Alabama 94
Master Car Builders' Ass. of the U. S. 594
Mastodon Mine, Ariz..... 72
Matancita Mine, Lower Cal., Mex.... 464
Matchless Mine, Colo..... 573
Matheson & Co., London..... 267
Mathez, August..... 462
Mattes, C. F..... 148
Maxim Automatic Guns..... 594
Maxim, Hiram..... 594
Maxwell, J. P..... 352
Maxwell Land Grant Co. & the U. S.. 124
May Claim, Utah..... 194
Mayflower Mine, Nev..... 73
Mazanon Mine, Spain..... 509
McBride, John..... 352
McClure Coke Co., Pa..... 441
McCosh I. & S. Co., Iowa..... 71
McDonald, Malcolm A..... 439
McIntosh & Hemphill..... 305
McKay, David, Jr..... 305
McKee, H. Seliers..... 73
McKeesport Electric Light Co.....170, 484
McMaster, Wm. H..... 241
McMath, Robt. E..... 71
McMurdo, Col. Edw.....414, 439
McMurray, Rev. J. P..... 16
McNeil, John.....17, 171
McRae, Wm., Assignment of..... 94
*McSweeney's Regenerative Puddling Furnace for Natural Gas..... 367
Means & Russell Iron Co., Ky..... 508
Mears Chlorination Process, Working, in N. C..... 308
Mechanical Engineers, American Society of..... 461
* Mechanical Quarrying and Stone Cutting..... 478
Mechanic's Lien Law Test Case in Montana..... 18
Mechanics of Engineering (Fluids).. 483
Meetings.....Weekly
Mendeune Bluff Mine, Ont..... 464
Mier Iron Co., Ill..... 71
Mejia Mine, Sonora, Mexico..... 98
Melladito Mine, Guanajuato, Mexico. 195
Mellott Gas Well, Ohio..... 420
Melones Cons. Mg. Co., Cal..... 284
Mendel, Col. George H..... 240
Menominee Dist., Mich., Iron Ore Production, for 1888..... 146
Menominee Dist. Iron Ore Shipments, 461, 489, 507, 527, 548, 573, 594
Mercantile Year Book and Directory of Exporters in London, Manchester, Liverpool, Birmingham, Glasgow and Bristol..... 395
Merchant Steel Ass..... 506
Merchants' Exchange, Buffalo, Coal Committee of..... 150
Mercury, Purification of..... 260
Meriden Malleable Iron Co., Conn.418, 439
Merritt, Thos. G..... 218
Merton, Henry R. & Co , London Table of Copper Production of the World.. 311
Metal Exchange, New York..... 34
Metal Market Report.....Weekly
Metal, Prices of the Rarer .....Weekly
Metal Production of U. S. in 1888, Valentine's Statistics..... 94
Metal, Rolling Liquid..... 483
Metal Statistics..... 110
*Metal Tie Question and the *Railroad Gazette*.....*277, 295, 363
*Metal Ties for Railways, *210, *277, 295, 363, 547
Metal Ties vs. Wooden..... 547
Metals and their Uses, the Rarer..... 166
Metals, Electrolytic Separation and Refining of..... 259
Metals, Imports and Exports of..Weekly
Metals of the Platinum..... 586
Metallurgical Patents.....15, Thereafter Weekly
Metallurgy of Ancient Iron..... 546
*Metallurgy of Steel, the, 67, 91, 142, 167, 238, 261, 281, 303, 349, 371, 436
Supplement 223, 231, 239, 247, 255
Metamorphism in Rocks..... 4
Metric System of Weights and Measures, The Extension of..... 408
Metropolitan Light Co., Mo., Consolidation of..... 49
Mexican Cable, a New..... 216
Mexican Coinage Statistics..... 94, 195
Mexican Commerce at Laredo..... 572
*Mexican Concentrating Mill..... 324
Mexican Congress, Pres't Diaz's Message to..... 342
Mexican Finances and Resources..407, 432
Mexican G. & S. Mg. Co., Alaska..... 263
Mexican Guadalupe Mg. Co., Nuevo Leon, Mex..... 332
Mexican Impt. Co., Jalisco, Mexico... 441
Mexican Mahogany Lumber..... 327
Mexican Mine, Alaska..... 429
Mexican Mining Law.....61, 184
Mexican Mg. Co., Nev., 82, 173, 266, 356, 465, 552
Mexican Mining News, 98, 125, 194, 220, 265, 285, 309, 332, 377, 398, 420, 441, 464, 509, 530, 551, 574
Mexican Mints, Coinage of.....94, 195, 509
Mexican Nat'l Construction Co., Mexico..... 285
Mexican Nat'l Mg. Co., Michoacan, Mex..... 195
Mexican Ore Question, 430, 453, 473, 475, 541, 513, 533, 583, 585
Mexican Penalty for Mine Salting.... 83
Mexican and South American Markets..... 107
Mexico and Japan, New Treaty..... 526
Mexico and Lower Cal..... 309
Mexico, Cave Dwellers in..... 526
Mexico, Foreign Investments in..... 564
Mexico, Improvements in the City of 119
Mexico, Progressive..... 317
Mica.....319, 342
Mica Deposits, Mont..... 573
Michels, Ivan C., on Mexican Ore Question..... 430
Michigan Gas Co., Ohio..... 148
Michigan Gold Co., Mich..... 124
Michigan Mine, Colo..... 507
Michigan Mining News, 73, 96, 124, 147, 171, 241, 264, 284, 306, 331, 353, 375, 397, 419, 440, 485, 508, 529, 550, 573, 595
Michigan Ship Canal Scheme..... 280
Michigan Steel Co., Mich..... 240
Michigan Stove Co., Mich..... 396
Michoacan, Mex., Mining News, 98, 195, 286, 464
Mickley, Edwin..... 170
Micky Breen Mg. & M. Co., Colo..... 528
Middle Bar Mine, Cal., 122, 283, 374, 440, 462
Midland Cons. Mg. Co., Colo..... 595
Midland & Pacific R. R..... 550
Midvale Steel Co., Pa.....122, 170
Mikako Mine, Mich..... 147
Mikado Mg. Co., Colo..... 419
Mike & Starr Mine, Colo.....264, 485
Milan Mg. Co., Me..... 147
Milk, a New Method for Preserving.. 216
Miller, A. J..... 377
Miller, A. S., on Value of Crude Antimony..... 298
Miller, Charles W..... 353
Miller, Darling & Co., Mo..... 375
Miller Warner, on How to Promote Export Trade..... 318
*Mills, Carey's Portable..... 119
Mills, D. O..... 440
Millvale Iron Works, Pa..... 352
Mimbres Mg. Co., N. Mex..... 241
Mina Blanca Mine, Coahuila, Mex.... 19
Mina del Agua Mine, Durango, Mex.. 243
Mina Grande Mine, Chihuahua, Mex. 286
Mina Mine, Guerrero, Mex..... 420
Minas Prietas Mine, Chihuahua, Mex 286
Minas Prietas Mine, Sonora, Mex..98, 332
*Mine Cages, Dunstan's Safety Catch 65
Mine Gambling in London..... 251
Mine Inspectors of Pa., Appointment. 548
Mine No. 6, Brazil, Ind..... 96
Mine Output Record, a Remarkable.. 203
Mine Profits in 1888..... 28
Mine Salting, Mexican Penalty for.... 83
Mine Stores, Pa., Legislature Prohibiting Mg. Co.'s Keeping them..... 352
Mine Supplies, Pistols as..... 561
Minear, A. P.....22, 58, 353, 507
Minear, John I..... 95
Mineral Deposits of South Africa.... 530
Mineral Development of Alaska..... 507
Mineral Development of Mariposa Co., Cal..... 507
Mineral Development of Nev..... 398
Mineral Farm Mine, Colo..... 397
Mineral Land not Locatable when Patented as Agricultural..... 280
Mineral Lands of Tenn., Large Sale.. 376
Mineral Market Review.....Weekly
Mineral Oil Exports, 51, 193, 264, 354, 464, 551
Mineral Ore, Exchange for Exhibition of, at Denver, Colo..... 419
Mineral Production in 1888..... 114
Mineral Production of Canada in 1888. 453
Mineral Production of Colombia..... 332
Mineral Production of France in 1888. 302
Mineral Production of Hungary..... 243
Mineral Production of Saxony..... 457
Mineral Production of the U. S. in 1888.....28, 114, 540
Mineral Products of the U. S. since 1882..... 37
Mineral Production of Utah..... 51
Mineral Resources of Mozambique... 120
Mineral Wax.....327, 385
Mineral Wealth of British Columbia..... 526
Mineral Yield of Colo..... 219
Mineralogical Section of Brooklyn Institute..... 373
Minerals of New South Wales..... 593
Minerals and Chemicals.....Weekly
Miners' & Laborers' Amal. Assn..... 122
Miners Asking Reduction of Powder, 124, 441
Miners, Coal, Meeting of, in Ill..... 485
Miners' Convention in Ill..... 419
Miners, Convention of, River, Pa..... 574
Miners in Pa. Protesting Against the Price of Powder..... 441
Miners' Meeting in Ind..... 440
Miners' National Union, Meeting of.. 263
Miners of Southern Illinois, National Federation of..... 18
Miners, Organization of, in Pa..... 441
Miners, Progressive Union, Ohio Dist. 264
Miners' Strike at Wellington Coal Mine, Victoria, Brit. Col..... 74
Miners' Union, Wash. Terr..... 98
Miners' Wages Determined by Schuylkill Coal Exchange, 51, 149, 242, 331, 420, 530
Miners' Wages in Colo..... 440
Miners' Wages in Ill..419, 463, 485, 508, 529
Miners' Wages in Indiana, 96, 146, 263, 306, 440, 595
Miners' Wages in Iowa..... 96
Miners' Wages in Onio..... 420
Miners' Wages in Pa., 90, 97, 124, 149, 205, 242, 283, 331, 373, 420, 464, 530, 546
Miners' Wages in Sinaloa, Mex..... 442
Miner's Wages in Tenn..... 354
Mines and Mineral Deposits, Penon Blanco, Zacatecas, Mex., Report on. 442
Mines and Mining in Argentine Rep.. 111
Mines, How They are Floated in London..... 87
Mines in Colo., Taxation of..... 284
Mines in London, the American..... 135
Mines in Siam..... 327
Mines in Spain, the Goverment..... 348
Mingo Smelter, Utah..... 51
Mining and Financial Trust Syndicate, Ltd., London, Eng..... 443
Mining and Metallurgical Congress, International.....329, 548
Mining and Metallurgilal Patents, Weekly.
Mining and Reduction, Estimated Cost of..... 561
Mining and Timber Claims..... 497
Mining Bureau, Colo., Establishment 330
Mining Companies, Assessment in 1888 42
Mining Companies, Dividends, Monthly Record.....141, 217, 328, 417, 505
Mining Companies, Financial Statements of.....82, 90, 173, 266, 356, 465, 552
Mining Companies, Suits Brought Against, for not Filing Reports..... 527
Mining Companies, Timber Suits Against.....147, 305, 307, 485
Mining Developments of Calaveras Co., Cal..... 528
Mining Development of Utah..... 308
Mining Devices in Berlin, Exhibition 302
Mining, Effect of the Alien Act on.... 216
Mining Engineers, Amer. Institute of, 16, 170, 181, 206, 215, 230, 263, 329, 461, 584
Mining Enterprise in China..... 86
Mining Exchange, St. Louis Rules of. 510
Mining Exchange, the Consol, Admitting Stocks Listed Elsewhere..... 574
Mining in Algeria..... 327
Mining in Arizona..... 408

Mining in Colo., Economical..... 416
Mining Industry of Honduras..... 420
Mining Industry of Idaho..... 463
Mining Industry of Marion Co., Ark.. 484
Mining Industry of Sinaloa, Mex. Statistics of..... 442
Mining Industry, Phosphate, of South Carolina..... 83
Mining Interests of Ariz..... 134
Mining Investments in the U. S. Ter., Foreign..... 327
Mining Lands, Leasing of in Indian Terr..... 96, 192
*Min ng Law, an End-Line Case..... 84
Mining Law of Mexico..... 61, 184
Mining Patents.....Weekly
Mining Rights in Hungary..... 243
Mining School at Duluth, Minn., Negotiating for..... 16
Mining Section, Establishment of, by Institution of Civil Engineers in England..... 305
Mining Shares on N. Y. Exchanges.... 584
Mining Share Quotations.....Weekly
Mining Statistics, German..... 410
Mining Statistics, Nova Scotia, 1888.. 416
Mining Stock Exchange, Denver, Colo.....528, 595
Mining Stock Markets in 1888: Baltimore, Birmingham, Boston, London, Paris, Philadelphia, Pittsburg, St. Louis.....39, 40, 41, 42, 43
Mining Stocks, American, Listed in Paris..... 466
Mining Stocks, Baltimore, Birmingham, Boston, London, New York, Paris, Pittsburg, San Francisco, Weekly
Mining Stock Fluctuations in 1888: Baltimore, Birmingham, Boston, New York, Pittsburg, San Francisco, St. Louis, London, Paris, 44, 45, 46, 47
Minister of Mines, Brit. Col., Annual Report..... 376
Minnequa Zinc Mg. Co., Mo..... 441
Minnesota Group of Mines, Dak..... 306
Minnesota Iron Co., Minn..... 146
Minnesota Mining News..193, 219, 307, 550
Minnewawa Mine, Wis.....148, 398
Minnie Moore Mine, Idaho.....463, 529
Mint, a Chinese, Converted into a Cloth Factory..... 460
Mint, Director of, on Issue of Minor Coins..... 280
Mint, Work and Needs of the U. S.... 496
Mints, Mexican, Coinage of....94, 195, 509
Missing Link..... 298
Missouri Mining News, 97, 284, 307, 331, 375, 441, 485
Mitchell, Capt. George..... 548
Mitchell, Senator..... 122
Mitis Casting Made by Solid Steel Co, Ohio..... 241
Mitscherlich Process for Making Wood Cloth..... 215
Mizner, Lansing B., U. S. Minister to Central America..... 329
Modern Explosives..... 184
Modesty of the *Engineering News*.... 27
Modoc Mine, Colo..... 462
Moffat, E. S..... 50
Mogollon Cons. Mg. Co., N. M..... 463
Mohawk Mine, Dak..... 375
Molega Mg. Co., Nova Scotia..... 309
Mollie Gibson Mine, Colo.....241, 397
Molybdenite..... 583
Monarch Mg. Co., Ariz..... 72
Monitor Zinc Co., Colo..... 17
Mono Mg. Co., Cal., 82, 173, 266, 356, 440, 465, 552
Monongahela River Co., W. Va..... 148
Monroe, Prof. H. S..... 594
Mont Alto Iron Co., Pa..... 418
Montana Co., Ltd., Mont., 18, 73, 193, 364, 375, 485, 573
Montana Copper M nes, Production.. 30
Montana Mining News, 18, 51, 73, 97, 124, 147, 193, 219, 242, 264, 284, 307, 331, 375, 397, 441, 463, 485, 508, 529, 550, 573, 595
Montana Society of Civil Engineers.. 94
Montegut, Gabriel..... 283
Monterey & Mexican Gulf R. R. Co.. 398
Montezuma Mg. Co..... 244
Montreal Roll. Mills Co., Canada..... 122
Montrose Placer Mg. Co., Colo..... 509
Monumental Mine, Ore..... 508
Moore, Benjamin & Co..... 421
Moore, James T..... 423
Moore, Thos., on Volumetric Estimation of Nickel..... 481
Moral Standard in the Coal Trade.... 148
Morcom, Capt. Elisha.....94, 263
Moreau, F..... 305
Moreing, Mr..... 173
Morelos Mine, Guerrero, Mex..... 420
Morgan Mill, Nev..... 463
Morley Mg. Co., Cal..... 95
Morning Star Mg. Co., Colo..... 397
Moro on the Graz Sudbahn Steel Works..... 328
Morrell's, W. H., Ship Canal Scheme. 280
Morris Canal, Abandonment of..... 71
Morris County Mach. & I. Co., N. J... 419
Mortar and Cement, Permeability of.. 393
Mortar, Chemical Combination of Silica and Lime in..... 260
Morton, Henry..... 71
Mosher Hydraulic Mine, Cal..... 528
Moss Bay I. & S. Works, Wash. Terr. 308
Mossback Mine, Ala..... 458
Motive Power by Atmospheric Exhaust..... 83
Motley, Thornton N., Catalogue of, 305, 330
Motor, the Thomson-Houston Electric 170
Mount Cory Mg. Co., Nev..... 266
Mount Diablo Mg. Co., Nev..193, 376, 596
Mount Olive Consol. C. & C. Co..... 50
Mount Torry Mg. Co., Va..... 308
Mountain Goat Mine, Idaho..... 331
Mountain Daisy Mg. Claim, Utah.... 486
Mountain Lion Mg. Co., Mont..... 73
Mountain View Mg. Co., N. M..... 508
Mozambique, Mineral Resources of.. 120
Mudd, S. W..... 218
Mudsill Mg. Co., Colo..... 353
Mueller, 'Dr. F. C. G., on Hydrogen Occluded in Steel..... 435
Mulatos Mine, Sonora, Mex.....441, 442
Multiple Jaw Crusher, the Blake..... 181
Multiple-Wire System, Suit for Alleged Infringement on..... 439
Muncie Natural Gas Impt. Co., Ind.. 171
*Munroe, Prof. H. S., on St. Joseph Lead Co.'s Concentrating Works, 566, 588
Munson, Dr. George C.....71, 219
Murmann, Gustavus..... 71
Mutual Gas Co., N. Y..... 354
Mutual Mg. & Sm. Co., Wash. Terr., 332, 355

N

Nabob Mg. Claim, Utah..... 486
Nail Ass., the Eastern, Meeting of 336
Nail Mfrs., Western Ass..... 548
Nails, Wire for the Levant..... 227
Nails..... 37
Namquit Mill, R. I..... 439
Napa Cons. Quicksilver Mg. Co., Cal.. 17
Narragansett Elec. Lighting Co..... 439
Nash, Joseph..... 352
Nashville L., S. & Charcoal Co., Tenn.. 94
Nat'l Academy of Sciences..... 373
Nat'l Ass. of Builders..... 176
Nat'l Convention of Machinery Constructors, K. of L..... 395
National Copper Mg. Co., Mich..... 397
National Federations of Miners, Ill... 18
National Lead Trust.....266, 487, 553, 576
National Meter Co..... 373
Nat'l Progressive Union..... 122
Nat'l Society of Geologists..... 373
Nat'l Stove-Makers' Ass..... 373
National Transit Co..... 58
National Tube Works Co., Pa..... 16
National Vulcan Burner Co., N. Y.... 94
Nat'l Water-Works Convention..... 373
Natural Cements..... 546
Natural Gas at Aitkin, Minn..... 307
Natural Gas at Andover, N. Y..... 354
Natural Gas at Buffalo, N. Y..... 357
Natural Gas at Greenwood, N. Y...19, 73
Natural Gas at Hadley, O..... 285
Natural Gas at Kempton, Ind..... 284
Natural Gas at Kerville, Tenn..... 172
Natural Gas at Kingsville, Ont... 147, 265
Natural Gas at Oak Creek, Wis..... 172
Natural Gas at Sandy Creek, N. Y.... 148
Natural Gas at Thurston, Ohio.....97, 285
Natural Gas Fuel Co., N. Y..... 467
Natural Gas in Australia..... 435
Natural Gas in Erie Co., N. Y..... 150
Natural Gas in Ky., Pipe Line for.... 594
Natural Gas in Pipes to Dayton, Ohio. 376
Natural Gas near Belle Vernon, Pa... 376
Natural Gas near Palestine, Ohio..... 331
Natural Gas not to be taken out of Indiana..... 241
Natural Gas Oil Co., Ohio..... 78
Natural Gas, the Beginnings of..... 547
Natural Gas Tides..... 121
Natural Gas Wells & Salt Water..... 118
Navajo Mg. Co., Nev., 73, 82, 147, 173, 266, 356, 376, 463, 465, 552
Navarro, Juan N., on Value of the ENGINEERING AND MINING JOURNAL Export Edition..... 498
Naylor & Co., N. Y..... 533
Neath Gold Mg. Co., Colo..... 484
Negaunee Concentrating Co., Mich... 73
Neodesha Mine, Colo..... 264
Neptune Mg. & M. Co., Colo.....353, 507
Nevada Bullion Production in 1888... 51
Nevada Irrigation Scheme..... 284
Nevada Mill, Nev..... 354
Nevada Mg. Co., Mont..... 508
Nevada Mining News, 51, 73, 97, 124, 147, 171, 193, 220, 242, 264, 284, 307, 331, 354, 375, 398, 419, 441, 463, 485, 529, 550, 574, 596
Nevada Mg. & Red. Co..... 193
Nevada Nitre Co., Nev..... 463
Nevada Pacific R.R..... 461
Nevada Queen Mg. Co., Nev., 73, 82, 147, 173, 266, 356, 375, 465, 550, 552
Nevada, Senator Stewart's Report on Timber Cutting in..... 307
Nevill's Mine, Cal..... 528
*New Almaden Quicksilver Mines, Cal..... 10
New Bedford Water-Works Assn., Meeting of..... 218
Newberry, Fred..... 464
Newberry, J. S..... 71
Newberry-Vautin Process, Use of, in Dak..... 508
Newberry-Vautin Process, Use of, in Grass Valley, Cal..... 219
New Brunswick Marine R. R..... 342
Newbury, Dr. S. B..... 329
New California Mg. Co., Ltd., Colo., 507, 528
New Chinese Port..... 14
New Deal Mine, Dak..... 306
New England G. & S. Mg. Co., Colo.. 219
New England Julien Elec. Co.....218, 283
New England Transportation Co..... 400
New England Water-Works Assn, 122, 484
New Flagstaff Mg. Co., Ltd., Utah.... 596
Newfoundland R. R., Construction in. 418
New Gregory Mg. Co., Colo..... 573
New Guston Co., Ltd., Colo.....374, 573
New Hampshire Mining News..... 124
New Hoover Hill G. Mg. Co., Ltd., N. C.....308, 331, 529
New Jersey Copper Extraction Works..... 506
New Jersey Mining News..... 242
New Jersey Z. and I. Works Shipments of Zinc..... 599
New London Mine, Cal.....122, 284, 374
New Mexican Iron Co..... 373
New Mexico, Cliff Dwellers in..... 138
New Mexico Mining News, 97, 124, 148, 193, 220, 242, 264, 331, 354, 376 419, 441, 463, 486, 508, 551, 574, 596
*New Mexico, Santa Fe Copper Co.'s Property..... 345
Newport Aluminum and Cast Steel Co., Ky..... 329
Newport I. & S. Works, Ky..... 49
New Publications..... 182
New South Wales, Aust., Mining News..... 420
New South Wales R. R. Returns..... 526
New York Central R. R. Co..... 467
New York and Chicago Fire Statistics..... 593
*New York City Rapid Transit..... 278
New York Coal Stocks.....Weekly
N. Y. Coal Stocks' Fluctuation in 1888. 45
New York Coal Trade Review...Weekly
New York Cons. Mg. Co., Nev., 148, 354, 356, 465, 552, 574
New York Electrical Subway Explosions..... 296
New York Hill Mg. Co., Cal..... 305
New York & Hond. Rosario Mg. Co., Hond.....354, 509, 596
New York Imports and Exports of Metals.....Weekly
New York Iron Market Review..Weekly
New York Irri. & Mg. Co.'s Canal, Idaho..... 550
New York Metal Exchange..... 34
New York Mineralogical Society..... 218
New York Mining Stock Fluctuations in 1888..... 44
New York Mining Stocks.....Weekly
New York & Nova Scotia Iron & R'way Co..... 439
New York, Ontario & West. R. R. Co. 527
New York & Perry C. & I. Co., O.51, 124
New York Placer, Colo..... 529
New York Regulations for Handling Explosives..... 565
New York Regulations for Transporting Explosives..... 562
New York Salt Deposits..... 133
New York & San Domingo Lumber & Mg. Co., Santo Domingo..... 99
New York & San Francisco Mining Stock Markets in 1888..... 39
New York Mining Stock Quotations, Weekly
New York Stock Exchange, Election of Officers..... 461
New York Street Travel..... 121
New York & Westmoreland G., C. and C. Co., Pa.....19, 285
New Vancouver C. Mg. & L. Co., Ltd, Brit. Col..... 220
Niagara Falls, Scheme for Utilizing the Water Power..... 311
Niagara River & Erie R. R. Co..... 598
Niagara River Iron Co., N. Y.....53, 75
* Nicaragua Canal, 133, 181, 305, *414, 439, 484, 506, 593
Nicaragua Mining News.....377, 441
Nichols, F. B.....43, 152, 250, 534
Nichols, F. B., Nitrate Market, 1888.. 43
Nichols, Ralph..... 329
Nicholson, W. H..... 507
Nickel and Cobalt Decomposition, 87, 183, 301, 527
Nickel and Zinc, Separation of..... 482
Nickel Estimation, Volumetric..... 481
Nickel Mines of Norway..... 327
Nickel Ore Deposits of Ariz..... 192
Nickirk, Henry..... 549
Nigger Hill Tin Mg. Co., Dak..... 96
Nightingale Mine, Ariz..... 507
Nilo Mine, Sonora, Mex..... 98
Nimikon Mine, Wis..... 98
Nisi Prius Cons. Mg. Co., Colo.....96, 241
Nitrate Industry of Chili.....107, 451, 569
Nitrate Market, Review of..... 43
Nitrate of Soda Consumption..... 450
Nitrate of Soda, Exports of..... 450
Nitrate of Soda Report..... 472
Nitrate of Soda Shipments..... 534
Nitrate of Soda Statistics, 152, 250, 362, 534
Nitrate of Soda, Stock of..... 450
Nitrate of Soda, Visible Supply of.... 56
Niwot Mine, Colo.....95, 549
Nobles, Sheldon..... 122
Nobles & Sherlock..... 122
No Man's Land..... 570
No Name Mine, Dak..... 375
Non-Dividend Paying Mines, Tabl., Weekly
Norfolk C. & C. Co., West Va..... 52
Norrie Mine, Mich.....18, 72, 124, 146, 399
North American Asphalt Co., Utah.... 397
North American Salt Co., Ltd.....582, 604
North Belle Isle Mg. Co., Nev., 73, 82, 173, 242, 266, 356, 375, 463, 465, 552
North California Mine, Cal..... 440
North Carolina Mg. News, 307, 331, 398, 529
North Chicago Rolling Mill Co., 106, 246, 268, 289, 333, 418, 439
N. Commonwealth Mg. Co., Nev., 82, 124, 173, 193, 266, 307, 355, 356, 406, 550, 552
N. Commonwealth Mg. Co. vs. Found Treasure Mg. Co..... 307
Northern Chief Mg. Co., Utah..... 52, 421
Northern Pacific Co., Wash. Terr..... 194
North Occidental Mg. Co., Nev..... 331
North Peer Mg. Co., Ariz..... 82
North Star Mg. Co., Cal., 123, 219, 440, 462, 595
North Star Mine, Idaho..... 374
North Tamarack Mg. Co., Mich.....51, 306
Northwestern Mg. & Exchange Co., Pa..... 242
Northy, Richard..... 122
Norton Iron Works, Ky..... 548
Norway, How Telegraph Poles are Preserved in..... 302
Norway, Relicts of the Iron Age in... 435
Norway S. & I. Works, Mass..... 305
Norway, Wood Pulp Industry in..... 321
Norwegian Nickel Mines..... 327
Norwegian Process for the Manufacture of Chrome Iron..... 483
Norwegian Tunnel to Float Timber... 260
Norwood, C. J., on the Coal Production of Kentucky..... 237
Nottingham Shaft Record..... 203
Nova Scotia Mineral Lands, Improvement of..... 377
Nova Scotia Mining News, Canada, 19, 265, 285, 309, 377, 398, 530
Nova Scotia Mining Statistics for 1888. 416
Nowell, Thos. S..... 507
Nuevo Guatemoctzin Mine, Hidalgo, Mex..... 243
Nuevo Leon, Mex., Mining News, 52, 194, 286, 332
Nueva Luz Mine, Guanajuato, Mex... 332
Nunn, L. L.....396, 397

O

Oaxaca, Mex., Mining News..... 332
Oberholser, R. S..... 170
O'Brian, James, First Discoverer of Gold in Australia..... 570
Occidental Cons. Mg. Co., Nev., 18, 73, 82, 173, 242, 264, 266, 356, 376, 465, 486, 552, 596
Occidental Oil Co., N. Y..... 333
Ocean Racers.....429, 539
O'Farrell, John..... 49
Ohio Institute of Mg. Engineers..... 16
Ohio Oil Co.....376, 420
Ohio Oil Field, Production of..... 173
Ohio, Oil Prices of.....244, 597
Ohio Mining News, 51, 97, 124, 148, 172, 220, 264, 285, 331, 376, 398, 420, 441, 508, 551, 596
Ohio State University, Chemical Laboratory of, Burned..... 170
Ohio & Western C. & I. Co., Nev..... 172
Ohm, Erection of a Statue of..... 218
Oil Age, the Coming..... 216
Oil at Southbury, Conn..... 123
*Oil Burner, a Novel..... 481
Oil, Colo., Experiments for Lubricating Purposes..... 353
Oil Exports, 74, 124, 148, 172, 194, 242, 285, 308, 332, 354, 376, 398, 464, 486, 509, 530, 551, 574, 596
Oil Fields of Ohio, Production of, 173, 222
Oil Fields of Russia.....173, 260
Oil Fields West Va., Turkey Foot Dist 173
Oil Fields of Wyoming.....172, 330, 332
Oil in Australia, Discovery of..... 551
Oil, Lima, Ohio, 97, 220, 222, 356, 376, 378, 508, 553
Oil, Lima Ohio, Pipe Line for..... 508
Oil, Lima, Ohio, Process for Refining, 356, 553
Oil Market Review.....Weekly
Oil near Leyronville, Pa..... 420
Oil, Ohio, Price of..... 244
Oil Shipments from New York..... 122
Oil Tank for Oil Piped from Lima, Ohio, Burst..... 94
Oil Wells, Injunction Restraining Drilling in Washington Borough, Pa 509
Ojo Negro Mine, Sonora, Mex..... 442
Oker, Geo. W..... 18
Oklahoma Terr. Mg. News..... 530
Olcott, E. E..... 192
Old Belden Mine, Colo..... 171
Old Dominion Copper Co., Ariz..... 240
Old Dominion Mine, Wash. Ter.. 96
Old Guard Mg. Co., Ariz..... 461
Old Rails..... 37
Oleomargarine Manufacture..... 210
Olive Branch Mine, Colo..... 397
Olive Mine, Cal..... 17
Olive vs. Castor Oil for Lubrication... 302
Olive Tin Mg., M. & Mfg. Co., Dak.... 96
Oliver Bros. & Phillips..... 94
Oliver, Henry W..... 439
Oliver Iron & Steel Co., Pa..... 530
Oliver & Robert Wire Co..... 94
Olsen, Herr O., Process for Manufacture of Chrome Iron..... 483
Omaha & Grand Smelter, Colo..... 50
Omega Mill, Nev..... 441
Omega Mg. Claim, Dak..... 485
Ontario, Canada, Mining News, 98, 265, 398, 464
Ontario Mg. Co., Utah, 51, 172, 265, 287, 355, 377, 486
Opium in China, the Consumption of, 460
Ophir Mine, Idaho..... 463
Ophir Mg. Co., Nev., 18, 82, 173, 266, 356, 463, 465, 552
Options for Selling Petroleum..... 597
O. R. & N. Mg. Co., Mont..... 574
Ordnance and Fortification Board..... 593
Ore and Coal Carrying Steamers..... 584
Ore, Cost Producing in Sinaloa, Mex. 442
Ore Market Report, Leadville, Colo., 74, 221, 286, 355, 442, 474, 574
Ore Markets, Georgetown, Colo..... 221
Ore Question, the Mexican. 430, 453, 473, 475, 541, 543, 563, 583, 585
*Ore Separator, Buchanan Magnetic, *542, 563, 585
Ore Separator, Edison's Magnetic, 171, 181, 305, 331
Oregon G. & S. Mg. Co., Ore..... 50
Oregon Imprt. Co., Wash. Terr..... 97
Oregon I. & S. Works, Ore..... 309
Oregon Mining News.....97, 285, 308
Oregon, Platinum in..... 273
Orita Placer Mine, Rep. of Col....309, 551
*O'Rourke, John F., on the Poughkeepsie Bridge..... 118
Origin and Formation of Porcupine Vein, Ontario..... 347
Orleans Cons. Mg. Co., Nev..... 244
Oro Bar Mg. Co., Cal..... 172
Oro Bella Mg. Co., Ariz..... 548
Oro Fino Silver Mg. Co., Mont..... 529
Orofino Mine, Idaho.....264, 463
Oro Flat Mg. Co., Cal..... 172
Oro Grande Gold Mg. Co., Cal..... 440
Oro Hill Mg. Co., Cal..... 172
Oro Mine, Colo..... 123
Oro Mg. Claim, Dak..... 485
Orphan Boy Hill Cons. Mg. Co., Colo.. 353
Opoteca Mines, Hond..... 420
Osceola Coal Co., Pa..... 148
Osceola Mine, Colo..... 95
Osceola Mg. Co., Mich, 18, 147, 171, 242, 354
Osceola-White Crow Litigation, Colo., 462, 528, 549
*Osgood Dredge..... 411
Osmium..... 588
Osterlin, Dr. Chas..... 16
Otis Elevator in Eiffel Tower..... 548
Otto Colliery, Pa..... 51

Ouray Union Mg. Co., Colo..... 397
Ouspensky on New Russian Oil Fields 260
Ovens, the Adams Movable Bottom... 216
Overman Mg. Co., Nev., 73, 82, 173, 193, 220, 264, 266, 285, 331, 354, 356, 463, 465, 552
Overton Mg. Co., N. Mex..... 51
Oviatt, Howard..... 263
Ownbey, J. A 49
Oxford G. Mg. Co., Nova Scotia..... 220
Oxford Iron & Nail Co., N. J..... 16
Oxford Iron Works, N. J..... 94
Oxygen in the Sun..... 546
Ozokerite, American.....121, 295, 327

P

Pabst Mine, Mich..... 550
Packer, Elisha..... 572
Pachuca Dist., Mex., Adit for the Drainage of Mines..... 594
Pacific Guano Co., S. C.....176, 486
Paint, White Lead and Zinc, Making of, in Maine..... 147
Paints, Fire Proof..... 499
Palace, the Coal, Building of, at Trinidad, Colo..... 192
Palisade Mine, Ontario, Canada..... 464
Palladium and its Uses 166, 587
Palmer, C. E., on Rico, Colo., as a Smelting Centre..... 160
Palmer Mine, Mich..... 354
Palmetto Mine, Nev 26
Pamlico Mg. Co., Nev.....18, 264, 284, 331
Panama Canal.....133, 419
Panuco G. & S. Mg. Co., Coahuila, Mex..... 19
Paper from Pine Tops..... 13
Paper Made of Sawdust..... 368
Paper, New Uses for..... 417
Paper Powder..... 121
Paradise Valley Mg. Co., Nev... 147
Parent, Chas. E.....219, 307
Paris, Atmospheric Exhaust Motive Power System..... 83
Paris Exhibition, a Great Globe at... 302
*Paris Exposition.....*454, 500
Paris Exposition, Tiffany's Display.. 280
Paris Mining Stock Market.....43, 466
Paris Mining Stocks.....Weekly
Paris, Popp Compressed Air System.. 458
Paris, Scripps' League Sending Workingmen to..... 506
Parish, Alfred 240, 373
Park City Mg. Co., Utah..... 486
Park Mine, Mont..... 242
Park-Regent Mine, Colo.....244, 397
Parke, John G., on the South Fork Dam Disaster..... 517
Parker, W. A..... 94
Parkes, J. C..... 439
Parks, Prof. C. Wellman..... 263
Parmalee, H. S..... 527
Parmelee, Wm. H..... 396
Parrott Copper Co., Mont.193, 308, 550, 596
Parsons, Chas. B..... 485
*Parsons' Compound Steam Turbine. 62
Party Elec. Battery Co., Pa..... 94
Pat Murphy Mg. Co., Colo.....287, 336, 334
Patents, American, Limited by Foreign..... 159
Patents, Greene's Electric Motor 215
Patents, Mining, Metallurgical, and Kindred Subjects.....Weekly
Pattee, J. M..... 16
Pattern Makers' League of North America..... 461
Paul, Dr..... 240
Pavement of India Rubber..... 10
Pavement of Steel Plates..... 121
Payroll Mine, Colo..... 462
Pay Rolls, Comstock Mg. Companies, Nev..... 550
Peach Stones as Fuel..... 417
Peacock, Richard..... 461
Pearl Mg. Co., Mont..... 219
Pearson's Aluminium Manufacture... 571
Peat Moss Imported from Germany Free of Duty..... 418
Peck, Guy D..... 527
Peckham, Wm..... 374
Pecos Irr. & Invest. Co. of N. Mex.... 71
Peel's, Hon. A. W., Address to the American Engineers..... 539
Peer Mg. Co., Ariz., 82, 146, 173, 266, 356, 465, 552
Peerless Mg. Co., Ariz., 72, 82, 171, 173, 266, 356, 396, 461, 465, 528, 552, 594
Pelican Dives Mine, Colo..... 353, 462
*Pelton Water Wheel..... 320
Pelton Water Wheel Co., Cal., 320, 418, 572
Pence Mine, Wis..... 398
Pencoyd Iron Co., Pa..... 240
Pendill Iron Co., Mich..... 147
Pendulum, and the Earth's Rotation.. 505
Peninsula Mg. Co., Mich.....440, 550, 595
Penn Iron Co., Pa..... 305
Penn Fuel Gas Co., Pa..... 19
Penn Yan Mg. Co., Mont..... 97
Pennsylvania Coal Co. and the Owners of the Schooner Henry W. Sage. 510
Pennsylvania Coal Co., Pa.....285, 308, 486
Pennsylvania Coal Miners, Wages of, 90, 97, 124, 149, 205, 242, 283, 331, 373, 420, 464, 530, 546
Pennsylvania Coal Workers, Wages of.....19, 90, 191, 354, 357
Pennsylvania Concentrating Co..... 305
Pennsylvania Iron Co., Mich..... 550
Pennsylvania Mine Inspectors, Appointment of..... 548
Pennsylvania Mining News, 19, 97, 124, 148, 172, 193, 220, 242, 264, 285, 308, 331, 354, 376, 398, 420, 441, 464, 486, 508, 530, 551, 574, 596
Pennsylvania Museum and School of Industrial Art..... 484
Pennsylvania Oil, Price of..... 597
Pennsylvania Puddlers, Wages of, 170, 218, 240, 263, 305
Pennsylvania R.R. Co..... 305
Pennsylvania R.R., Building New Bridges..... 572
Pennsylvania Railroad Cars..... 121
Pennsylvania R. R., the Working Force of..... 348
Pennsylvania Salt Deposits..... 242
Pennsylvania Slate Exchange—Combination..... 102
Pennsylvania Steel Co.....106, 146, 218, 329
Percy Chester Mine, Colo..... 171
Permeability of Cement and Mortar.. 393
Perro Bravo Mine, Chihuahua, Mex., 98, 286
Perry, John S..... 329
Perseverance Mg. Claim, Utah..... 486
Persian Elec. Light Co 506
Persian R. R. & Construction Co..... 506
Personals.....Weekly
Peters, Jr., Dr. E. D. 110, 251, 283, 285
Peters, Jr., Dr. E. D., on a Great Copper Furnace Record..... 251
Peters, Jr., Dr. E. D., on Mining Statistics..... 110
Petroleum, Colo., Experiments with, as Lubricant..... 353
Petroleum in Australia, Discovery of. 551
Petroleum Market for 1888 37
Petroleum Market Report.....Weekly
Petroleum Options..... 597
Petroleum, Production, Russia, 1888.. 188
Petroleum, Prices of, during 1888..... 38
Petroleum Wells in Austria..... 526
Pettee, Wm. H..... 71
Pewabic Mg. Co., Mich.....96, 171, 354, 485
Pewabic & Franklin Mg. Co. & Quincy Mg. Co., Mich..... 171
Phelps, Dodge & Co., N. Y..... 374
Phil Sheridan Mg., Co., Nev.....73, 220
Philadelphia & Idaho Co., Idaho..... 375
Philadelphia & Reading R. R., Pa., 19, 49, 73, 124, 240, 308, 420, 551. 596
Phila. & Read. C. & I. Co., Pa., 19, 49, 51, 124, 148, 266, 376 400, 486
Phila & Read. Coal Strike, Investigation of..... 49
Philadelphia as a Manufacturing and Exporting Port..... 5
Philadelphia's Export Trade.....5, 205
Philadelphia Iron Market Review, Weekly.
Philadelphia Mining Stock Market in 1888..... 40
Philadelphia Natural Gas Co., Pa., 19, 220, 242, 376, 441
Phila. Sm. & Refg. Co., Colo., 17. 50, 72, 193, 219, 241, 253
Philbrick, E. S..... 170
Phillips & Claghorn on Cost of Steel Making in Ala..... 214
Phillips, James M., vs. Neikirk, Henry, et al..... 419
Phillips Mill, Colo..... 241
Phillips, Prof. A. B., on Mica Mining in N. C..... 319
Philos, on the Advantages of Philadelphia as an Exporting Port..... 5
Phœnix Chemical & Mineral Paint Works, Utah..... 352
Phœnix Coal Co., N. S..... 530
Phœnix Iron Co., Pa..... 97
Phœnix Mine, N. C..... 308
Phœnix Mg. Co., Ariz., 26, 77, 99, 125, 149, 196, 244, 263, 552, 575, 597
Phœnix Mine, Utah..... 420
Phœnix Sampling & M. Co., Ariz..352, 507
Phonograph, Esquille's Photographing..... 394
Phonophone, the..... 392
Phosphate Litigations in S. C., Settlement of..... 534
Phosphate of Lime Deposits in Russia..... 442
Phosphate of South Carolina, 83, 152, 272, 298, 362, 450, 486, 534
Phosphates, Canadian, 181, 231, 406, 428, 534
Phosphates, Imports of..... 272
Phosphates in the U. S. and Canada, the Future of.....181, 231, 253
Phosphorus, Improved Mode of Making..... 500
Photographic Dry Plates, Self-Developing..... 237
Photography, New Uses of..... 407
Photographing Phonograph..... 394
Photometers..... 217
Pianos, Dr. Eisenmann's Electric..... 327
Piedmont Red. Co., N. C..... 398
Pierce, H. S..... 146
Pierson, H. W..... 123
Pietzka Revolving Puddling Furnace, 188, 279
Pig Iron, American Prices of 37
*Pig Iron, Cupolas for Melting, 161, 185, 232, 254, 299
Pig Iron Freight Rates, 20, 127, 223, 401, 489
Pig Iron Freight Rates from Birmingham..... 127
Pig Iron Freight Rates from Ohio..... 223
Pig Iron Freights by Southern R.R. and S.S. Ass.....401, 489
Pig Iron, Prices of, in England and Scotland 533
Pig Iron, Production of, in 1888..... 106
Pig Iron, Production of, in Brit. Col.. 530
Pig Iron Production in the U. S. in 1888.....78, 120
Pig Iron Shipments from Middlesboro', Eng..... 533
Pig Iron Warrant Trust...106, 107, 128, 203
*Pile Driver, the De Wit Steam..... 12
Pinal Cons. Mg. Co., Ariz..... 552
Pine Grove Mg. Co., Ariz..... 509
Pine Mountain I. & C. Co., Ky..... 375
Pine Run Nat. Gas Co., Pa..... 193
Pine Tops, Paper from..... 13
Pineville C., I. & L. Co., Ky..... 16
Pinney, Geo. M..... 527
Pioche Cons. Mg. Co., Nev.....51, 242
Pioneer Mg. Co..... 244
Pipe Line Certificates.....Weekly
Pipe Line for Natural Gas from Ohio to Mich..... 148
Pipe Line from Lima to Chicago....78, 508
Pipe Line from Wyoming Oil Fields.. 172, 330
Pipe Making, Rapidity in..... 505
Pipes, Glass-Lined Iron 121
Pipes Made of Steel in Eng..... 140
Pistols as Mine Supplies..... 561
Pitkin Co., Colo., Mines, Development of..... 241
Pittsburg & Lake Superior Co., Mich. 171
Pittsburg & Southern Coal Ass..... 53
Pittsburg & Southern Coal Co., Pa., 53, 124, 511
Pittsburg Coal Trade Review.....Weekly
Pittsburg Construction Co., Pa..... 170
Pittsburg Gas Co., Pa 333
Pittsburg Iron Market Review...Weekly
Pittsburg Iron Workers' Wages Scale 592
Pittsburg Mining Stocks .....Weekly
Pittsburg Mining Stock Market in 1888 41, 46
Pittsburg Reduction Co..... 506
Pittsburg Steel Casting Co., Pa..... 122
Pittsburg Stock Quotations. .....Weekly
Placer Mines, Colo.....240, 306
Placer Mines in Idaho, Development. 550
Placer Mines of Lower Cal., Mex., 194, 441
Placer Mining in California..... 66
Plancha de Plata Mine, Chihuahua, Mex..... 19, 286
Plancha de Plata Mines, Sonora, Mex..... 98, 194, 332
*Planté, Gaston..... 586
Plata Rico Mine, Colo.....330, 264
Plates, Self-Developing Photographic Dry..... 237
Platinum.....273, 586
Platt, Jos. C..... 16
Pleasant Valley Coal Co., Utah..... 51
Pluma Mine, Ariz..... 374
Plows, Railroad Snow..... 66
Pluma Consol. Mg. Co., Dak..... 18
Plumas Eureka Mg. Co.'s Report..... 388
Plummer, John F., How to Promote Export Trade..... 318
Plummer, Capt. John W..... 218
Plymouth Cons. Gold Mg. Co., Cal., 72, 123, 146, 218, 265, 276, 284, 305, 374, 396, 440, 462, 531, 548, 552
Plymouth Roll. Mill Co., Pa..... 373
Plympton, Prof., on Electric Conductors Under Ground..... 252
Pneumatic Dynamite Gun Co..... 71, 146
Pneumatic Gun Carriage & Power Co., Washington, D. C..... 594
Pneumatic Gun Carriage & Projectile Co., Mass..... 548
Pocahontas Mg. Co., Dak..... 284
Porcupine Mine, Ont.....98, 243, 347, 464
Poetsch Shaft Sinking Method, 331, 412, 517
Porlar-Accidental Mine, Colo..... 171
Pollock Mg. & M. Co., Mont..... 529
Pond, John..... 353
Pondera Mg. Co., Nev.....82, 244, 266
Pontez, Prof. Chas..... 122
Poore, Hon. John M..... 71
Poorman Mg. Co., Colo.....17, 95
Poorman Mine, Idaho..... 96
Pope, Hon. John Henry 329
Popocatapetl Volcano, Pueblo, Mex., Explorations on for Sulphur 441
Popp Compressed Air System..... 458
Poppies as Protectors of Embankment..... 280
Population of Russia..... 302
Porcelain and Glass, Electroplating of 571
Porphyrite S. Mg. Co., Idaho..... 508
Portable Houses, Use of..... 418
Porter, Col. A. J..... 509
Porter, H. K. & Co., Pittsburg, Pa., 138, 192, 418
Porter, H. K. & Co., Locomotives in Japan..... 138
Porter, Robert P.....363, 561
Porter, Robert P., on Vital Statistics. 561
Porter F. & Mach. Co., Pa..... 283
Portland Lime Co..... 421
Portland Lumber Co., N. Mex..... 242
Portland Mg. Co., Dak..... 508
Portuguese Cons. Copper Mines..... 76
Positions Vacant Column of ENGINEERING AND MINING JOURNAL..... 439
Post, Major James C..... 240
Potash Fertilizing Salts, Effect of the Tariff on Prices of..... 519
Potash from Kelp, Establishment of Works near San Diego, Cal 219
Potash Salts, Duty on.....384, 512, 534
Potassic Cyanide for the Estimation of Copper..... 459
Potosi Mg. Co., Nev., 73, 82, 173, 266, 367, 356, 398, 465, 486, 550, 552
Potter's, Wm. B., Address to the Am. Inst. of Mg. Engrs..... 181
Potts, Sam'l J..... 71
Pottstown Iron Co., Pa.....94, 122
Pottsville Iron & Steel Co., Pa., 71, 122, 146, 283, 305, 373
*Poughkeepsie Cantilever Bridge..... 116
Pourcel, Alex.....439, 570
Pourcel, Alex., on Basic Open-Hearth Steel..... 570
Powder, Hengst's..... 395
Powder Made of Paper..... 121
Powder, Reduction of, for Miners Asked for.....124, 441
Powderly, Gen'l Master Workman.... 218
Powell, E. O. M..... 305
Powell, James, on Effect of High Prices in Copper 61
Powell, Major J. W..... 484
Powelton Iron Co., Pa..... 94
Power, Electric Transmission of..... 8
Power, Transmission of, by Compressed Air..... 9
Practice and Theory..... 3
Praying by Machinery..... 327
Precious Stones, Collection of American..... 305
Preserving Milk, a New Method for. 216
President Quintett Mg. Co., Col., 50, 397, 595
Presque Isle Gas Co., Pa..... 148
Preventable Accidents..... 539
Price, E. A..... 332
Price List, Illustrated Export.....1, 133
Prices of Building Material.....Weekly
Prices of Chemicals.....Weekly
Price of Copper During 1888..... 32
Prices of Copper from 1860..... 32
Price of Gilsonite in Utah..... 52
Prices of Iron and Steel.....Weekly
Prices of Iron and Steel at Louisville, N. Y., Pittsburg.....Weekly
Price of Iron and Steel in December for Three Years..... 58
Prices of Iron in 1888..... 36
Prices of Iron Ore Lake Superior, Mich ..380, 402, 445, 489, 511, 533, 577, 599
Prices of Lead Since 1870..... 35
Prices of Locomotives..... 417
Prices of Metals.....Weekly
Prices of Mining Stocks.....Weekly
Prices of Ore, Leadville, Colo., 74, 221, 286, 355, 442, 474, 574
Prices of Petroleum .....Weekly
Prices of Petroleum During 1888..... 38
Prices of Rarer Metals .....Weekly
Prices of Silver.....Weekly
Prices of Zinc in New York..... 35
Princess Mine, Lower Cal., Mex... 441, 551
Princess Mine, Nev..... 508
Princeton University, N. J., Electrical Dept. at..... 439
Prize for Threshing Mill in Australia.. 417
Prize for Useful Discovery, the Bressa. 140
Prize Problems, the German..... 191
Prochaska, Ernst, Estimate of Cost of Steel Making in Alabama..... 214
Process, a New Steel Making.....115, 373
Process of Producing Bleaching Powder Direct from Natural Brine by Means of Electricity..... 600
Process, the Croselmire.....17, 125
Process, the Walsh, for Smelting and Reducing Zinc Ores..... 330
Producer's Ass. of Pa..... 149
Production of Arizona Copper Mines.. 30
Production of Anthracite....20, 50, 197, 422
Production of Anthracite Mines, Gunnison Co., Colo..... 50
Production of Coal in Colo.....17, 171
Production of Coal in Germany..... 526
Production of Coal in Ill..... 550
Production of Coal in Iowa..... 18
Production of Coal in N. Mex..... 242
Production of Coal in Ohio 441
Production of Coal in the U. S. in 1888, 28, 251, 259
Production of Coal in Utah..... 51
Production of Coal in Wyoming..... 52
Production of Comstock Mining Companies, Nev.....193, 463
Production of Copper in 1888, 1, 28, 30, 31, 59, 157, 311
Production of Copper in Colo. in 1888.. 50
Production of Copper, Lead and Zinc in 1888..... 1
Production of Copper in Utah..... 51
Production of Copper in Mont.. 30
Production of Copper, the World's.... 31
Production of Gilsonite in Utah..... 52
Production of Gold and Silver in 1888, 28, 209, 540
Production of Gold in Colo. in 1888.... 50
Production of Gold in Idaho in 1888... 51
Production of Gold in South Africa... 530
Production of Gold in the U. S. in 1888 28
Production of Gold in Utah..... 51
Production of Gypsum in Nova Scotia 74
Production of Iron Ores in 1888.....28, 36
Production of Lake Superior Copper Cos..... 30, 147, 171, 242, 354, 550
Production of Lead and Lead Oxide in Germany..... 460
Production of Lead in 1888, 1, 28, 33, 50, 59, 341
Production of Lead in Colo. in 1888.... 50
Production of Lead in Idaho in 1888... 51
Production of Lead in Utah..... 51
Production of Minerals, Canada, 1888. 453
Production of Minerals, U. S., 1888, 28, 114, 540
Production of Minerals in Germany.. 410
Production of Minerals in Saxony 457
Production of Minerals in Utah .. 51
Production of Pig Iron in the U. S. in 1888 ..... 28, 106, 120
Production of Quicksilver, 208, 253, 401, 402, 555
Production of Russian Petroleum in 1888 188
Production of Salt in Utah..... 51
Production of Silver in Colo. in 1888... 50
Production of Silver in Idaho in 1888.. 51
Production of Silver, U. S., 1888..... 28
Production of Silver in Utah..... 51
Production of Spelter in 1888..... 175
Production of Steel Rails in the U. S. in 1888 ..... 28, 77
Production of Sulphur in Italy in 1888. 593
Production of Sulphur in Sardinia 301
Production of Zinc in 1888. .....35, 175
Production of Zinc in 1888.....1, 28, 35, 175
Profit Sharing with Employés by Haines, Jones & Cadbury Co 16
Profits in Mining in 1888 28
Progress in Gun Making 229
Progressive Union of Miners of the Ohio District 264
Projectile, a Forged Steel..... 14
Promontorio Mine, Sonora, Mex..... 442
Propeller, an Air..... 280
*Prospecting with the Diamond Drill. 235
Protection Against Accidents by Explosives..... 562
Protection Against Canadian Chemicals..... 290
Protection, Moderation and Justice in 562
Protectora Mine, Guanajuato, Mex... 332
Proustite Mg. Co., Idaho..... 123
Proveedora Mine, Mie oacan, Mex... 286
Providence Coal Co., R. I..... 148
Providencia Mine, San Luis Potosi, Mex.....332, 442
Public Works, Philadelphia, Coal Contract of..... 100
Puddlers, Wages of, in Pa., 170, 218, 240, 263, 305
*Puddling Furnace, for Natural Gas, McSweeney's..... 367
Puddling Furnace, the Pietzka Revolving.....188, 279
Puebla, Mex., Mining News..... 441
Pueblo Mg. Co., Hond..... 530

Pueblo Sm. and Refg. Co., Colo., 50, 284, 485
Pullman I. and S. Co., Ill 240
Pump, Blake Triple Compound Condensing 418
Pumping by Electricity in Mines 545
*Pumps for Irrigation 88
Purification of Water by Iron 14
Purification of Water in Colo 330
Purissima Mine, Michoacan, Mex 195
Puzzler Mine, Colo 95, 462

Q

Quaker City Mine, Cal 528
*Quarrying & Stone Channeling Machines, Wardwell and Ingersoll. *347, *500
*Quarrying & Stone Cutting, Mechanical 478
*Quarrying by Wire Cord 321
Quantitative Analysis, Review of Cheever's 182
Quarterly Yield of the Comstock Lode, Nev 463
Quartz as an Insulator 435
Quebec, Canada, Mg. News 509, 551
Queen Mine, Ont 464
Queen of the Hills Mg. Co., Idaho. 219, 463
Queen Planchas de Plata Mine, Chihuahua, Mex 286
Queensland, Aust., Mg. News 125
Queensland Customs Tariff 327
Quertaro, Mex., Mining News 286
Quicksilver Exports 357, 488, 555
Quicksilver Imported & Exported from England 577
Qicksilver Market Review ..... Weekly
Quicksilver Market Statistics, 311, 357, 401, 488, 555, 577
Quicksilver Mines in Durango, Mex. 420
Quicksilver Mines in Jalisco, Mex 471
Quicksilver Mines in Spain 348
*Quicksilver Mines of New Almaden, Cal 10
Quicksilver Mg. Co., Cal., 50, 171, 352, 355
*Quicksilver Ore Fines at Almaden, Spain, Treatment of 544
Quicksilver Production, 208, 253, 401, 402, 555
Quincy & Torch Lake R. R. 354, 485
Quincy Mg. Co., Mich., 18, 147, 171, 242, 344, 354, 397, 485, 529
Quijotoa, Ariz., Destroyed by Fire 594
Quintette Mine, Colo 397

R

"R. 162" Mine, Ont 98
Rabbit Mountain Mine, Ont 464
Ragged Mountain G. Placer Mg. Co., Colo 240, 306
Rail Mill Record at Chicago 121
Railroad and Coal Stocks in 1888 38
Railroad Brake, an Electric 205
Railroad Building in Mex 286
Railroad, Building of, at Iron Mines, Mich 241
Railroad Cars, Steel Passenger 12
Railroad Construction in Newfoundland 418
Railroad Crossing, Electric Signal 216
Railroad Extension in Australia 593
Railroad Gauges of the World 15
Railroad Gazette & Metal Ties, *277, 295, 363
Railroad Snow-Plows 66
Railroad, the Hudson's Bay 212
Railroad, the Pennsylvania's Working Force 348
Railroad, the Tehuantepec 414
*Railroad Ties, Metal, *210, *277, 295, 363, 547
Railroads in China 260, 418, 483
Railroads in Colombia 482
Railroads in India 460
Railway Across Australia 280
Railway Live Fish Cars 215
Railway Returns, New South Wales. 526
Railway, the Chignecto Marine 342
Railway, the Russian Trans-Continental 417
Railways, Communication Between Argentine and Chilian 551
Railways, Forfeit Land Grants in Texas 551
Rails, Durability of Steel 348
Rails, Steel, Shipments by Mills in 1888 106
Rainbow Mine, Nev 51
Rameraze-Varela Colonization Co., Mex 220
Rand Drill Co., N. Y. 373, 375, 388, 509
Rand Duplex Air Compressor Plant, First One in Honduras 509
*Rand Sectional Air Compressors 388
Randol, J. B., on Production of Quicksilver 10, 208, 253, 402
Randolph, John C. F 16
Rapid City Mg. Claim, Dak 485
*Rapid Transit, Electric. *278, 451, 473, 475
Rappahannock G. Mg. Co., Va 148
Rapporteur Esthétique 593
Rare Metals and their Uses 166
Rarer Metals, Prices of ..... Weekly
Raunheim, S., Santa Fe Copper Co.'s Property 345, 574
Raven Mine, Ariz 507
Raveret, A. F 461
Ray Copper Mg. Co., Ariz 192
Raymond, R. W., on Charles Stewart Stone 62
Raymond-Varela Colonization Co., Oaxaca, Mex 332
Real de Monte Mine, Hidalgo, Mex. 52, 594
Reading Iron Works, Pa., 16, 218, 240, 263, 283, 330, 352, 418, 461, 484, 506, 527
Reading Trust Co., Pa 352, 418
* Recalescence of Iron 435
Recompensa Mg. Co., Durango, Mex. 420
Record, a Challenge Shaft Sinking 11
Record, a Great Copper Furnace 251
Record, a Remarkable Mine Output at Nottingham Shaft, Pa 203
Record at North Chicago Rail Mill 121
Record, Edgar Thomson Steel Works. 269
Record, the Best Shaft Sinking 125, 157
Record, the Hinckle Blast Furnace 432
Recovery of Ammonia and Chlorine in the Ammonia Soda Process 160
Red Chief G. Mg. Co., Cal 50, 374, 549
Red Cloud Mine, Cal 507
Red Lion Mg. Co., Mont 97, 124
Red Elephant Mg. Co., Colo 310
Red Quartz Mine, Coahuila, Mex 19
Red Squirrel Mine, Dak 306
Red Stone Quarries, Colo 50
Reduction Works, Erection of, at Seattle, Wash. Terr 51
Reed Mine, Colo 528
Reed, Walter, on Carbon Dioxide Gas Springs 344
Reese, Jacob, Arrangements for a Cast Steel Gun 218
Reeve, A. A., on the Wiswell Amalgamation Process 48
Reform Needed in Custom-House Returns 295
Refugio Mine, Nuevo Leon, Mex 52
Refugio Mine, Sonora, Mex 98
Refugio Mine, Zacatecas, Mex 442
Reid, Wm 192
Reliance Iron Works, Wis 16, 352
Reliant Mg. Claim, Dak 485
Remington, Philo 329
Remini Sm. Co., Mont 219
Remnant Extension Mine, Ariz 507
Reno, H. C 420, 439
Reno, Nev., Destruction of, by Fire 508
Rensselaer Polytechnic Institute, Meeting of the Alumni Ass. of 94
Repair and Construction of Roads 322
Report of French Commission on Explosives 394
Report of the Am. Iron & Steel Assn. 393
Report of the Atlantic Mg. Co., Mich. 275
Report of the Caledonia G. Mg. Co., Dak 570
Report of the Director of the Mint upon Production of the Precious Metals in the U. S. during 1887 121
Report of the Horn Silver Mg. Co., Utah 257
Report of the Plumas Eureka Mg. Co., Cal 388
Report of the Plymouth Cons. Mg. Co., Cal 276
Report of the Quincy Mg. Co., Mich. 344
Report of the Ridge Copper Mg. Co., Mich 257
Report of the Rio Tinto Co., Spain. 473, 476
Report of the Sierra Buttes Gold Mg. Co., Cal 388
Reports on the Mining Industries of New Zealand, 1888 571
Republic Iron Works, Pa 530
Republic Mine, Mich 146
Republic Mg. Co., Mont 574
Rep. of Colombia Mining News, 195, 221, 243, 309, 332, 377, 442, 465, 509, 551, 596
Resources and Finances of Mexico 407
Resources of Wyoming 571, 593
Restandora Mine, Michoacan, Mex. 286
Resultate der Untersuchungen des in der Eifel vorkommenden Vulkanischen Sandes 593
Resumption Mg. & Sm. Co., Colo 462
Revenue Mine, Idaho 264
Review of the Copper Industry 29
Review of the Nitrate Market in 1888. 43
Revenue Return, Australian 141
Reymert Manganiferous Lode, Ariz. 139
Reynold, T. H 527
Reynoldsville Mg. & Mfg. Co., Pa 354
Rhode Island Mining News 148, 376
Rhodes, Hiram M 439
Rhodes, R. D 329
Rhodium and its Value 166
Rialto Mg. Claim, Mont 193
Rice, Allen Thorndike 461
Rich Hill C. Mg. Co., Mo 97
Rich, Moritz 353
Richards, George W 461
Richards, Robt. H 71
Richmond Chemical Co 352
Richmond Cons. Mg. Co., Ltd, Nev., 242, 307, 364, 485, 550
Richmond Locomotive Works, Va., 418, 461
Richmond & Eureka Co.'s Case, Nev. 364
Rickard, Alfred 527, 528
Rickard, Forbes 528
Rickard, Reuben 98
Rico, Colo., as a Smelting Center 160
Rico Conc. Works, Colo 219
Ridenbough Canal, Idaho 550
Ridge Copper Mg. Co., Mich 257
Ries, Elias E., on Electric Welding of Pipes 495
Rio Arriba Mica Mg. Co., N. M 331
Rio Tinto Copper Co., Spain, 245, 421, 473, 476
Riotte, E. N 49, 594
Risdon Iron Works, Cal 396
Rittenhoff Mine, Cal 462
River Gold Mine, Cal 528
Riveting Stove Pipe, a Machine for 66
Roads, Construction and Repair of 322
Robbins, Chas. Albert 439
Robbins, S. & Son 594
Robert E. Lee Mg. Co., Colo 353
Robert Hare Powel & Co., Pa 94
Roberts, Gustave L., and the Brookwalter Process 240
Roberts, Mrs. H. A 439
Robinson Cons. Mg. Co., Colo 241
Robinson, S. S 134, 241
Robinson, S. S., on Influence of ENGINEERING AND MINING JOURNAL 134
Roblee, Charles 374
Rochester & Pittsburg C. and I. Co., 100, 197
Rochester Transportation Co., N. Y. 423
Rock Drill Challenge 298
*Rock Drilling Machinery, Portable. 207
Rock Island Mg. Co 244
Rock Salt Struck at Kingman, Kan. 375
Rocks, Metamorphism in 4
Rockland, Me., Lime Industry, 384, 450, 472
Rocky Bar Wide West Gold, Ltd., Idaho 375
Rocky Fork Coal Co., Mont 124
Rocky Fork R. R 147
Rocky Mountain C. and I. Co., Wyo. 52
Rocky Mountain Sm. Co., Colo 528
Rocky Springs Coal Co., Wyo 52
Roeder, Dr. F. A., Scale Patents 439
Roeker, Chas. M 98, 243
Roeser, F., on the Smelters of Utah. 65
Rollins G. & S. Mg. Co., Colo 264
*Rolling Mills, Universal 523
Roofing Slate, Exports of 272, 362
Rope vs. Electrical Transmission of Power 317
Rope Driving in England 483
Ropes G. & S. Mg. Co., Mich., 26, 51, 124, 264, 331, 485
Ropes, Strength of Hemp and Aloe 483
Ross, Dr. Thos. H 377
Rosanna Mine, Dak 306
Rosario Mine, Hond 420
Rosario Viejo Mine, Hidalgo, Mex., 99, 243
Roslyn Mines, Wash. Terr 308
Roth & Jennings, N. Y 354
Rothwell, R. P 8, 16
Rothwell, R. P., on the Present Status of Electric Transmission of Power. 8
*Rowan, F. I., on Electric Pump 545
Rubber Mats for Type-Writing Machines 527
Ruby & Dunderberg Cons. Mg. Co., Nev 463
Ruby Group of Tin Mines, Dak 529
Ruby Mines Co., India 222
Ruby Mines of Burmah 215
Ruby Silver Mg. Co., N. Mex 376
Ruby Trust Mg. and M. Co., Colo., 330, 353, 374, 440
Rüdorff, Herr F., on Electrolytic Assay of Copper 342
Rupert, Col. John L 146
Russell, Geo 125
Russell G. Mg. Co., N. C 308
Russell Process, 124, 275, 352, 364, 375, 376, 377, 434, 498, 595
Russell Process and the Use of Cupric Chloride in Leaching 275, 364, 434, 498
Russia, Gold Dust Swindle in 395
Russia, Iron and Soda in Southern 280
Russia, Population of 302
Russian Lead Mines 260
Russian Mining News 442
Russian Oil Fields 173, 188, 261
Russian Petroleum, Production, 1888. 188
Russian Silver and Lead Ores 191
Russian Trans-Continental R. R 417
Rust Sampling Works, Aspen, Colo 595
Rust, W. R., vs. Aspen Mg. & Sm. Co. 264
Ruthenium 280, 588
Ryan Smelter at Tacoma, Wash. Terr 509

S

Sabinal Mine, Mex 286
*Sack, Hugo, on Universal Rolling Mills 523
*Safety Catch for Mine Cages, Dunstan's 65
Safety Mg. Claim, Dak 485
Safford, Prof. Jas. M., on Stetefeldt's Lixiviation of Silver Ores 505
Saginaw Mine, Mich 485
Sala Silver Mine, Sweden 368
Salomon & Dulon 122
Salt Deposits of N. Y 133
Salt Discoveries in Pa 242
Salt, Duty on 250
Salt Output to be Taxed in England. 280
Salt Production of Utah 51
Salt Trust 51, 215, 272, 290, 302, 582, 604
Salting Mines in Mex., Penalty for 83
Saltpeter Trade of Chili 14
Sam Christian G. Mg. Co., N. C 308
Samoan Scare 252
Sampson Mg. Co., Colo 582
Sampson Mg. Co., Utah 52, 97, 194, 332
San Anton Mines, Guanajuato, Mex. 332
*Star Antonio de Yguana Mill, Mex. 324
San Antonio, Tex., Important Headquarters for Mining Operations 464
San Augustin Mine, Sonora, Mex 442
San Buenaventura Mine, Hidalgo, Mex 243
San Cristobal Mine, Guerrero, Mex. 420
San Cristobal Mine, Zacatecas, Mex. 52
San Diego Flume, Cal 219
San Diego Iron Works, Cal 396
San Diego Mine, Chihuahua, Mex 19
San Eduviges Mine, Chihuahua, Mex. 286
San Francisco and N. Y. Mining Stock Market in 1888 39
San Francisco Cons. Mg. Co., Mont. 375
San Francisco Mine, Lower Cal., Mex. 98
San Francisco Mining Stock Fluctuations in 1888 45
San Francisco Mining Stocks ..... Weekly
San Francisco Mining Stock Quotations ..... Weekly
San Francisco Stock & Exchange Board 82, 334, 378
San Francisco Stock & Exchange Board, Dues of 82
San Francisco Stock & Exchange Board, Seats in, are Individual Property 334
San Gayetano Mine, Durango, Mex. 420
San Geronimo Mine, Mex 194
San Ignacio Mine, Chihuahua, Mex. 286
San Ignacio Mine, Michoacan, Mex. 286
San Jacinto Syndicate, Ltd., Cal 219
San Javier Mine, Sonora, Mex 442
San Jose Mine, Chihuahua, Mex 286
San Jose Mine, Guerrero, Mex 420
San Jose Mine, Sinalao, Mex 442
San Jose Mine, Zacatecas, Mex 442
San Juan Chief Mine, Colo 528
San Juan Mine, Sonora, Mex 442
San Luis Potosi, Mex., Mining News, 194, 442
San Luis Potosi, Mex., Mint, Coinage. 194
San Meronimo Mine, Sonora, Mex 442
San Miguel Gold Placers Co., Colo 462
San Miguel Mg. Co., Lower Cal., Mex 286
San Marcos Mine, Hond 420
San Nicholas Mine, Lower Cal., Mex. 98
San Patricio Mine, Coahuila, Mex 19
San Pedro Mine, Nuevo Leon, Mex 52
San Rafael Mine, Zacatecas, Mex 442
San Ricardo Mine, Sonora, Mex 442
San Roque Mine, Vera Cruz, Mex 286
San Salvador Spanish Iron Ore Co., Ltd., San Salvador 509
San Salvador Mining News 509, 574
San Sebastian Gold Mg. Co., San Salvador 74, 98, 574, 597
San Sebastian Mine, Hidalgo, Mex 98
Sanborn, J. H 527
Sand Carbonate Mine, Ark 573
Sanderson, Capt 440
Santa Ana Mine, Sonora, Mex 194, 332
Santa Catalina Mill, Ariz 507
*Santa Clara Dist., Lower Cal., Gold Fields 265, *276, 309, 441
Santa Cruz Mine, Sonora, Mex 332
*Santa Fe Copper Co., N. Mex., 58, 97, 124, 148, 242, 244, *345, 354, 356, 441, 508, 531, 551, 574
Santa Fe Mine, San Luis Potosi, Mex. 442
Santa Gertrudi Mine, Hidalgo, Mex., 52, 99
Santa Juliana Mg. Co., Chihuahua, Mex 125, 243, 309
Santa Lucia Mg. & M. Co., Hond 220
Santa Margarita Mine, Chihuahua, Mex 98, 286
Santa Rita Mine, N. M 441
Santa Rosa Mine, Guanajuato, Mex. 420
Santa Rosa Mine, Zacatecas, Mex., 442, 464
Santa Teresa Mine, Lower Cal., Mex. 464
Santa Teresa de Jesus Mine, Sonora, Mex 442
Santiago Gold Mg. Co., Rep. of Col., 52, 309, 596
Santiago Mg. Co., San Sal 355
Santo Eduwiges Mine, Chihuahua, Mex 19
Santo Domingo Mine, Chihuahua, Mex. 19
Santo Domingo Mining News 99
Sarah Mine, Dak 375
Sardinia, Sulphur Production 301
*Saunders Bar Channeler 347
Savage Mg. Co., Nev., 18, 73, 82, 124, 172, 173, 193, 220, 264, 266, 331, 354, 356, 376, 363, 465, 508, 552, 574
Sawdust Paper 368
Saws, How Circular, Are Made 15
Sawyer-Man Elec. Co 170, 173
Sawyer-Man Fibrous Carbon Patent. 170
Saxon Mineral Production 457
Scaife F. & Mach. Co., Ltd 461
Scaife, Wm. B. & Sons 461
Shanfuss, E. C 181, 297
Schenectady Locomotive Works 16
Scheu, C. H 123
Schneider & Co.'s Copper-Steel Alloy. 477
Schoenfeld, Prof. Edward 373
Schooley Mine, Pa 331
Schuyler Electric Light Co., Conn 71
Schuylkill Coal Exchange, Pa., Wages Determined by 51, 149, 242, 331, 420, 530
Schwarz, Theo. E 374
Schwatka, Lieut. F., on Cave Dwellers in Mexico 526
Science and Technology in Japan 258
Science, The Fairy Tales of 2
Scientific and Technical Work, Division of Labor in 204
Scientist, Evolution of the 561
Scorpion Mg. Co., Nev., 82, 266, 356, 398, 441, 465, 485, 487, 552
Scotch Iron 37
Scott Bar Mill and Mg. Co., Cal 305
Scott, John 305
Scranton Steel Co., Pa 106
Screws, The Smallest in the World 526
Scripps' League Sending Workingmen to Paris 506
Scruggs, Wm. I., U. S. Minister to Venezuela 329
Seaboard Steam Coal Ass., 53, 100, 126, 150, 174, 222, 266, 278, 288
Seabury Calkins Mg. Co., Dak 508
Sears, Oliver W 288
Seattle, Washington Terr., Destroyed by Fire 530
Secrétan, M. M 423
Section 33 Mine, Wis 398
*Sectional Air Compressors, Rand 388
Security Mg. and M. Co., Colo 596
Sedalia Mine, Colo 192
Sedgwick, Prof. W. T 16
Seg Bel & Mides Con. Mg. Co., Nev., 82, 173, 266, 356, 465, 551, 552
Segovia Mg. Co., Nicaragua 441
Self-Developing Photographic Dry-Plates 237
Seligman, David W 418
Sentex, Marechal, and Saunier, on Malleable Bronze 435
*Separator, Buchanan Magnetic Ore, *542, 563, 585
Separator, Edison's Magnetic. 171, 181, 305, 331
Sergeant Rock Drill Co., 94, 120, 221, 263, 298, 352, 432, 439, 484, *504
Series Electrical Traction 301
Serviss, G. P., on the Canals of Mars. 395
Sessions, Geo. W 49
Seth Cook Mine, Cal 507
Seven-Thirty Mine, Colo 219
Sewer Pipe Manufacturers, Combination of 94, 146
Sewing Machine, the Inventor of 324
Seymour, J. M 26, 125, 149
Shaft, Sinking a Deep One at Leadville, Colo 284, 397
Shaft Sinking at Pitkin Co., Colo 353
Shaft Sinking by the Poetsch System. 331, 412, 517
Shaft Sinking Record, a Challenge 11
Shaft Sinking Record, the Tamarack 135, 157
Shafts, the Removal of Ice in 453
Shakespeare Mg. Dist., N. M 419
Shan States, Silver & Lead Mining in 326
Sharon, W. E 463
Sharpless, Prof. Fred F., on Stetefeldt's Lixiviation of Silver Ores .. 416
Shawmut Coal Property, Pa., 242, 285, 288

Shears, Large Steel, at Bolckow, Vaughan & Co.'s Works..... 365
*Sheerlegs at Clydebank, Scotland, 120-ton 138
Sheffield & Birmingham C., I. & R. Co., Ala.....240, 373
Shelby Iron Co., Pa..... 396
Sheldon Axle Works, Pa 122
Sheldon, Gardner H..... 396
Sheldon Marble Co., Vt 464
Shinn, Wm. P..... 71
Sheriff & Sons..... 329
Sheridan Mg. Co..... 17
Sherman, A. J..... 223
Shipbuilding Yard, 120-ton Sheerlegs at Clyde Bank..... 138
Shipments of Coal by Ohio River from Pittsburg for Six Years..... 58
Shipments of Steel Rails by Mills in 1888 106
Ships of the Future, Will They be Armored?..... 252
Shoemaker, A. T..... 246
Shoshone G. Mg. Co., Idaho..... 306
Shuniah Weachu Mine, Ont..... 464
Siam Mines..... 327
Sibley, Frederick..... 329
*Sicilian Brimstone, Statistics of..... 279
Sierra Blanca Silver Mg. Co., Tex 464
Sierra Buttes Mg. Co., Cal.....353, 388
Sierra Madre Mg. and M. Co., Chihuahua, Mex..... 19
Sierra Mojada Mine, Coahuila, Mex.. 19
Sierra Nevada Cons. Mg. Co., Idaho, 96, 306, 440
Sierra Nevada Mg. Co., Nev., 82, 97, 173, 266, 356, 398, 465, 552
Skinner, T. L..... 374
Silica and Lime in Mortar, Chemical Combination of..... 260
Silicum Copper..... 547
Silver and Gold Production in 1888, 28, 209, 540
Silver and Lead Ores in Russia..... 191
Silver and Lead Mining in the Shan States..... 326
Silver Age Mg. Co., Colo.....284, 528
Silver Bar Mg. Co., Colo..... 72
Silver Bar Shipments from Butte, Mont., in 1888..... 51
Silver Belle Mine, Colo..... 595
Silver Belle, Ariz..... 72
Silver Brook Colliery, Pa..... 398
Silver Chain Mg. & M. Co., Mont..... 284
Silver Chest Mg. Co., Mont..... 595
Silver Chord Mine, Idaho..... 96
Silver Chord Comb. Mg. Co., Colo., 287, 306
Silver Creek Mine, Ont..... 464
Silver, Deposits of, at U. S. Assay Office, N. Y., 101, thereafter....Weekly
Silver Exports from the U. S..... 94
Silver, Fall in Price of..... 511
Silver Fox Mine, Ont 98, 464
Silver Glade Mine, Colo. 550
Silver Hill Mg. Co., Nev.....82, 356
Silver King Mg. Co., Ariz., 58, 72, 78, 82, 85, 86, 173, 305, 356, 364, 465, 552, 597
Silver King Mg. Co.'s, Ariz., Suit with the Government..... 364
Silver King Mg. Co., Mich.....244, 265
Silver-Lead Ores, Lixiviation of..... 319
Silver-Lead Ore Question, the Mexican..276, 430, 453, 473, 475, 541, 563, 583, 585
Silver Leaf Mine, Ariz..... 72
Silver Mines of Lower Cal., Mex..... 286
Silver Mg. Co. of Lake Valley, N. Mex. 196, 531
Silver Mountain, East End, Ont....98, 243
Silver Mountain, West End, Ont..... 243
Silver Ores, Leaching with Cupric Chloride.....275, 364, 434, 498, 563
Silver Ores, Cyanide of Potassium as a Lixiviation Agent for..... 1
Silver Ores, Hoffman's Lixiviation of, 156, 157, 163, 189, 236, 251, 255, 364, 435, 498
Silver Ores, Stetefeldt's Lixiviation of, 301, 319, 325, 348, 365, 416, 435, 458, 482, 505
Silver Peak Mine, Nev..... 28
Silver Production of the U. S. in 1888. 28
Silver Production of Colo. in 1888..... 50
Silver Production of Idaho in 1888..... 51
Silver Production of Utah..... 51
Silver Reef Mg. Co., Ariz..... 72
Silver Reef Mg. Co., Utah..... 51
Silver Star Mine, Idaho..... 375
Silver Star Mg. Co., Nev..... 244
Silver Tip Mine, Ont..... 464
Silver Valley Mg. Co., N. C..... 398
Silver Wave Mine, Colo 17
Silver Wolverine Mine, Ltd., Ont., 98, 243, 464
Silveropolis Mine, Utah..... 420
Simpson Coal Co., Colo.....17, 440
Sinaloa, Mex., Mining News..... 442
Siners Mine, Nicaragua, C. A..... 377
Skinner, T. L..... 573
Slag, Disposing of, Without Pots..... 66
Slag, Sulphurous and Desulphurized Blast Furnace..... 522
State Exchange, the Pa. Combination. 102
Slater Process for Zinc Ores..... 17
Slide Mine, Colo.....95, 462, 485
Sliding Scale, Carnegie, Phipps & Co. 484
Sloss I. & S. Co., Ala.....309, 489, 548
Sluicing Slag 66
Small Hopes Con. Mg. Co., Colo., 96, 219, 284, 355, 397, 422, 443, 462, 487, 595
Smelters, Colo., Production of, in 1888. 50
Smelters of Utah..... 65
Smelting Plant at Glenwood Springs, Colo 595
Smelting Works at Portland, Ore. 508, 285
Smelting Works, Erection of, at Spokane Falls, Wash. Terr..... 51
Smelting Works for Custom Ores at Castle, Mont..... 375
Smelting Works in Port Arthur, Ont. 243
Smith, Bartlett & Sears..... 288
Smith, Col. Howard M..... 288
Smith, Col. P. R..... 463
Smith, E. F. & L. K. Frankel, on Separation of Cadmium from Zinc..... 570
Smith, Edmund W. P..... 506
Smith, Ex-Consul..... 461
Smith, Hamilton..... ....26, 126, 222, 441
Smith, H. S..... 439
Smith, M. V..... 170
Smith, P. Minturn..... 192
Smith, Wm. Allen..... 329
Smith's Regenerative Gas Furnace... 170
Smith & Allman Mine, N. Mex..... 420
Smith & De Crano.....26, 126, 222, 441
Smyth, Sir Warrington, on Accidents in Mines..... 539
Smuggler Mg. & M. Co., Colo., 17, 123, 241, 374
Snow, Fall of Black 348
Snow-Plows for Railroad..... 66
*Snow Sheds of the Canadian Pacific. 212
Snyder Mg. Co., Cal..... 353
Soaping Geysers..... 574
Social Science Ass., Am..... 548
Société des Métaux, 26, 175, 223, 245, 267, 289, 311, 423, 465, 467, 479
Society of American Naturalists..... 16
Society of Civil Engineers, Amer., 461 517, 584
Society of Mechanical Engineers, Amer..... 461
Society of Mechanics and Tradesmen. 329
Soda and Iron in Southern Russia.... 280
Soda, Importations of..... 54
Soda Solutions as Transmitters of Heat..... 394
Sodium and Chlorine from Sea Salt, 61, 110
Sodium Manufacture in England..... 395
Solar Works, Ohio..... 376
Solid Steel Co., Ohio..... 240
Solvay Process Co., N. Y.....472, 490, 512
Sombrerete Mill & Mg. Co., Mex..... 377
Sonora Mining News, Mex., 19, 98, 194, 332, 442, 464
South African Diamond Industry...14, 551
South African Gold Fields.....11, 12, 341
South African Mining News.....530, 551
South American Commerce..... 327
South American Mining News, 195, 221, 243, 309, 332, 509, 530
South Australia Mining News..... 551
South Birmingham C. and I. Co., Ala..... 283
South Carolina Mining News...97, 464, 486
South Carolina Phosphate Properties.. 82, 152, 172, 298, 362, 450, 486, 534
South Eureka Mg. Co., Cal.....305, 484
*South Fork Dam Disaster.....*517, 584
South Joplin L. and Z. Co., Mo..... 331
South Montana Mg. and M. Co., Mont. 18
South Side Mg. Co., Mich.....221, 306
South Spring Hill Mine, Cal.....122, 374
Southern Freights on Pig Iron..... 489
Southern Gold Fields.....254, 458
Southern Oil and Pipe Line Co., Ohio. 594
Southern Pacific Railway Land Grant Forfeit..... 551
Southern Pacific R. R. Co., Cal.. 72
Southern Pig Iron in Northern Market 555
Southern R. R. and S. S. Ass., Pig Iron Rates.....501, 489
Southern Sm. and Red. Co., Ala..... 72
Southern Stove Manufacturers, Meeting of 373
Southfield Mine, B. C..... 377
Southwestern Mg. Co., Nev..... 307
Spanish Mining News, 195, 286, 348, 421, 465, 509
Spanish Steel Works, Sheffield, Eng., Making Steel Pig..... 370
Spar Gulch Mg. Co., Colo..... 462
Sparrowspoint R. R 146
Spears, H. A..... 441
Spectroscopy in Chemical Physics.... 395
Speed of Ocean Racers.....429, 539
Speed of Torpedo Boats..... 115
Spelter Market in 1888..... 35
Spelter Market Review.....Weekly
Spelter, Production of, in 1888..... 175
Spence, Hon. E. F., and the Big Telescope..... 505
Sperry Electric Mg. Machine Co..... 329
Spiegel Making at Chicago..... 121
Spiegeleisen Furnace Building at Chattanooga, Tenn 595
Spirit Mine, Colo.....17, 171
Sprague Elec. R. R. and Motor Co., N. Y..... 71, 418
Sprague, Henry E..... 146, 461
Sprague, N. E., on Water-proof Electric Motors..... 461
Spread Eagle Mg. Claim, Dak..... 485
Spring Garden Cl. & C. Co., Md 219
Spring Hill Coal Mines, N. S..... 348
Springfield Iron Co., Ill..... 105
Springer, Alfred Scale Patents..... 439
Springer Torsion Balance Co., N. Y. 439
Squaw Creek Mines, Cal..... 353
Squaw Harbor Mine, Alaska..... 49
Stamp Mills Running in South Africa 530
Standard C. & I. Co., Ohio..... 172
Standard Charcoal Co., Tenn..... 49
Standard Coal Co., Ala 283
Standard Cons. Mg. Co., Cal., 72, 82, 125, 173, 192, 266, 284, 355, 356, 374, 462, 465, 507, 549, 552
Standard Oil Co., 94, 100, 122, 124, 220, 332, 334, 376, 378, 396, 398, 420, 439, 461, 487, 553, 583
Standard Oil Co. and the White Lead Trust..... 487
Standard Oil Co. Interested in Illinois Steel Co..... 439
Standard Oil Pig-Iron Warrant Trust, 106, 107, 128, 203
Standard Refinery, Ohio..... 398
Standard Steel & Casting Co., Pa.... 146
Standards for the Analysis of Iron and Steel..... 480
Stanhope Furnace, N. J..... 439
*Stanley's Odd Jobs..... 412
Stanton, John.....241, 548
Star Mine, Dak..... 306
Star of the West Co., Colo..... 17
State Debts..... 570
Statistics, British Copper and Tin, from Custom's Returns..... 101
Statistics of Athracite Coal.....75, 400, 598
*Statistics of Coal in Illinois, 1888 571
Statistics of Copper, Lead and Zinc Production..... 1
Statistics of Copper..... .27, 61
Statistics of Metal..... 110
Statistics of Metal Production of U. S. in 1888, Valentine's..... 94
Statistics of Mining Industry of Sinaloa, Mex..... 442
Statistics of Nitrate of Soda, 152, 250, 362, 534
Statistics of Quicksilver, 311, 357, 401, 488, 555, 577
*Statistics of Sicilian Brimstone 279
Statistics of Trade of the Argentine Rep 1
Stauffer's Experiments on Permeability of Cement and Mortar 393
Staunton & West Augusta R. R. Co., Va 172
Steam and Water Power, Comparative Cost of..... 502
Steam Engines, the Future of..... 546
*Steam, Its Generation and Use..... 280
Steam Logging..... 115
*Steam Pile Driver, the DeWit..... 12
Steam Stamp, Operation of, at Homestake Mg. Co., Dak..... 485
*Steam Turbine, Parson's..... 62
Steamboat for Ice Crushing..... 297
Steamers Built for Russian Oil Trade 122
Steamers for Carrying Ore and Coal.. 584
Steamship Speed.....429, 539
Stearns, I. A., on Weight of Anthracite..... 496
Stearns, Roger & Co., Colo..... 572
Steel, Basic Open Hearth..... 570
*Steel, Boulton Apparatus for Compressing..... 456
*Steel Car Ties for Railroads.....210, 547
Steel Companies, Consolidation of North Chicago, Joliet & Union, 246, 268, 418, 439
Steel & Copper Alloy, Schneider & Co.'s..... 477
Steel Crop Ends, Duty on..... 170
Steel Gun, the Cast.....122, 146
Steelehrs, Oscar..... 49
Steel Forging, the Largest Ever Made in the U. S..... 527
Steel, Hydrogen Occluded in..... 435
Steel & Iron Analysis, International Standards for..... 480
Steel and Iron Institute of Great Brit., Meeting of 476
Steel and Iron Mfrers. Ass..... 396
Steel and Iron, Prices of, at N. Y., Pittsburg, Louisville.....Weekly
Steel and Iron, Price of, in December for Three Years..... 58
Steel and Iron Production, Statistics of.....379, 393
Steel and Iron Workers, Am. Ass., 305, 373, 396, 484, 527, 572
Steel and Iron Workers, Wages of, in Pa.....218, 240, 263, 305, 484, 592
Steel Making in Alabama, Cost of.... 214
Steel Making by Brookwalter Process..... 240
Steel Making Process, A New..... 115
Steel Manufacture, Indian Crucible.. 322
*Steel, the Metallurgy of, 67, 91, 142, 167, 238, 261, 281, 303, 349, 371, 436; *Supplement*.....225, 231, 239, 247, 255
Steel Passenger Railroad Cars..... 12
Steel Pig..... 370
Steel Plate Pavement..... 121
Steel Plates vs. Compound Armor.... 216
Steel Projectile, a Forged..... 14
Steel Rail Production, Statistics of, 28, 77
Steel Rails, Consumption of..... 77
Steel Rails, Durability of..... 348
Steel Rails, Market Review..... 37
Steel Shafts, Meeting of Manufacturers of..... 527
Steel, Soft, Process for Making..... 373
Steel Water-Pipes in England..... 140
Steel Wire Fly Wheels..... 522
Steel Works Record, Edgar Thomson. 260
Steel Works, the Graz Südbahn..... 328
Stemwinder Mg. Co., Idaho.....241, 306
*Stephenson Street Cars.....305, *410
Sterling Coal Co., Pa..... 172
Sterling Silver Mg. Co., Ariz..... 419
Stetefeldt's, C. A., Lixiviation of Silver Ores....301, 319, 325, 348, 365, 416, 435, 458, 482, 505
Steubenville I. & S. Co., O.....330, 373
Stevens Mine, Colo..... 219
Stevens, Wm. H.....16, 218, 353
Stewart, Senator, Committee to Investigate the Subject of Reclaiming Arid Lands..... 283
Stewart, Senator, on Effect of the Alien Act on Mining..... 216
Stewart, Senator, Report on Timber Cutting in Nevada..... 307
Stillwell & Bierce Mfg. Co., O.....16, 218
Stock Exchange, Denver, Colo..... 595
Stock Exchanges of London, Paris and N. Y., Geo. Rutledge Gibson... 48
Stocks and Lead and Copper Production..... 59
Stock Quotations, Mining.....Weekly
Stocks of Nitrate of Soda..... 450
Stocks, Gogebic Iron, in 1888..... 42
Stocks of Copper in 1888..... 31
Stocks of Lead in 1888..... 33
Stocks of Railroad and Coal Companies..... 38
Stockton Mine, Cal..... 17
*Stone and Gilt-Edge Claims, Leadville, Colo..... 109
*Stone Channeling and Quarrying Machines.....*347, *478, *500
Stone, Charles Stewart, Death of..... 62
Stone Cutters and Quarrymen, Assn.. 516
*Stone Cutting, Mechanical Quarrying..... 478
Stoney Creek Iron Co., Pa..... 396
Storage Battery Motive Power..... 370
Storage Batteries, the Julien, 66, 181, 240, 280
Storage Batteries, the Julien vs. Electrical Accumulator Co..... 280
Stores, Pa., Legislature Prohibiting Mining Companies Keeping Them.. 352
Stove Makers' National Ass 373
Stove Pipe, a Machine for Riveting... 66
*Street Car Building.....305, *410
Street Travel in New York..... 121
Streeter, Prof. R. R..... 439
Strength of Hollow Porous Earthenware 66
Strickland, Herbert 352
Strieby, Prof. Wm..... 527
Striedinger, J. H., on Explosives..... 562
Strike of Coal Miners at Brazil, Ind.. 595
Strike of Coal Miners in Tenn. 354
Strike of Iron Workers, Pa..... 572
Strike of Limestone Quarrymen, Pa.. 124
Strike of Miners in Ill..... 508
Strike of Miners in Pa.....420, 464
Structural Iron..... 37
Stubbs, James..... 572
Sturtevant Mill Co., Mass.....94, 263, 283
*Stwolinski, F. de, on San Antonio de Yguana Mill, Mexico..... 324
St. Clair Coal Co., Ala..... 94
St. Joe Mine, Colo..... 507
St. John, N. B., Lime Industry....421, 450
*St. Joseph Lead Co.'s Concentrating Works.....485, *566, *588
St. Kevin Mg. Co., Colo.....147, 374, 507
St. Mary's Canal Mineral Land Co., Mich..... 241
St. Paul Coal Market Report..... 444
St. Paul & Pacific Coal Co.....418, 444
St. Peter's Con. Mg. Co., Nev..... 97
St. Louis Engineers' Club Collecting Local Data..... 460
St. Louis Mexican Improvement Co., Jalisco, Mex..... 98
St. Louis Mg. Co., Dak..... 495
St. Louis Mg. Co., Nev.....356, 419, 465
St. Louis Mining Exchange, Rules of. 510
St. Louis Mining Stock Market in 1888 ..... .41, 47
St. Louis Mining Stocks...41, 47, 265, 287, 310, 334, 356, 378, 399, 422, 443, 466, 487, 510, 553, 575, 597
St. Louis Ore & Steel Co., Mo..... 16
St. Louis Yavapai Mg. Co., Ariz 595
St. Louis Zinc Co., Ark..... 507
Sublate Mine, Sonora, Mex..... 442
Submarine Bridge 571
Sucker Mine, Colo 95
Sudbury Copper Mines, Ont 52, 251
Suez Canal Traffic 368
Sukkur Bridge, India..... 481
Sullivan Cons. Mg. Co., Dak. 149, 331, 463
*Sullivan Diamond Core Drill 235
Sullivan Mine, Idaho 96, 440
Sulphur Deposits of Puebla, Mex 442
Sulphur from Volcano Pits 593
*Sulphur Kiln, the Claus..... 118
Sulphur Mines of Utah.....19, 265, 308
Sulphur Production of Italy in 1888... 593
Sulphur Production of Sardinia 301
*Sulphur, Statistics of Sicilian..... 279
Sulphuric Acid, Petition for a Duty.. 272
Sulphuric Acid, Safe Transportation.. 593
Sulphurous and Desulphurized Blast Furnace Slag.....522, 569
Sultepec Mg. Co., Guerrero, Mex..... 98
Summerville Mg. Co., Colo 330
Summit Mg. Co., Cal..... 82
Sun, Is there Oxygen in the?..... 546
Sunday Lake Mg. Co., Mich..... 421
Sunnyside Extension Mine, Colo.. 397, 595
Sunnyside Mines, Ind..... 440
Sunshine Mine, Colo..... 95
Superior G. & S. Mg. Co., Mich..... 508
*Supreme Court and the End-Lines... 109
Surprise Mines, Cal..... 353
Susquehanna Coal Co., Pa..... 97
Susquehanna Iron Co., Pa 305, 352
Sutherland, Col. W. J.....170, 376, 439, 508
Sutro, Theo., 78, 99, 122, 125, 173, 196, 221, 307
Sutro Tunnel Co., Nev., 78, 99, 125, 173, 196, 221, 244, 287, 307, 354, 398, 529, 596
Sutro Tunnel Co., Nev., Receipts and Disbursements for Five Years..... 173
Sutter Creek G. Mg. Co., Cal., 284, 462, 484
Swank, J. M..... 379, 393
Swank, J. M., Report on Iron and Steel Production in 1888..... 393
Sweden, Metal Mining in..... 368
Sweden's Wood-Oil Industry..... 394
Swedish Laborers Brought from Chicago to Charleston, S. C 97
Sweeney, Chas. M..... 418
Swineford, Hon. A. P..... 146
Swiss Cave..... 280
*Sydney Technical College..... 371
Sylvanite Mg. & M. Co., Colo..95, 462, 528
Symington Bros. & Co., Md., Chemical Works of 240
Syndicate and the Price of Copper... 317
Syndicates and Trusts..... 407
Syndicate, French Copper..174, 229, 245, 274, 289, 295, 317, 423, 445
Syndicate Mg. Co., Cal., 82, 173, 266, 356, 465, 552

T

Tabor, Senator A. W.....19, 98
Tachyphore, Wurtz's Electro Magnetic..... 473, 475
Tacoma Coal Co., Wash. Terr..... 308
Tacoma Smelting Co., Wash. Terr.... 285
Tacony Iron & Metal Co., Pa 16
Tajos Mine, Sonora, Mex 442
Takage, Mr 16
Takon Con. Mg. Co., Alaska..... 373
Takon Union Mg. Co., Alaska 507
Talc 475
Talisman Mine, Cal..... 374
Talisman & Stalwart Cons. Silver Mg. Co., Utah 507
Tamarack, Jr., Mg. Co., Mich., 307, 354, 441, 573
Tamarack Mg. Co., Mich., 18, 147, 171, 242, 244, 307, 354, 441, 550, 573
Tamarack-Osceola Copper Mfg. Co., 94, 192, 241, 306
Tamchow, China, Silver Mine 86
Tanable, S..... 16
Tank, the Largest Glass, in the World 506
Tanner Hill Mg. Property, Cal..... 306

Tanner Mg. Claim, Colo..... 241
Tariff, Drawback on Galvanized Fencing Wire 283
Tariff on Potash Fertilizing Salts 519
Tariff on Silver-Lead Ores..... 541
Tasmanian Customs Duties..... 327
Taylor, F. M..... 396
Taylor, J. & H 548
Taylor Piumas Mill & Mg. Co., Cal., 146, 330, 342, 386
Taylor, Wm..... 572
Taylor, W. H., on Wages in Coal Mining in Alabama in 1888..... 188
Taxation of Mines in Colo..... 284
T. B. D., on Mining in Ariz..... 408
Teal, George..... 507
Technical University of Victoria, Aust 13
Technology and Science in Japan 258
Tehuantepec Railroad..... 414
Telautograph, Gray's..... 140
Telegraph Mine, Dak..... 375
Telegraph Poles, How to Preserve..... 302
*Telephone, Royal E. House's 326
Telescope, Clark's, A. G. 40-inch Lens, for California..... 505
Telescope Senses. Discovery in the Manufacture of..... 302
Tenderfoot Mine, Dak..... 375
Tenn. C., I. & R. R. Co., 17, 122, 146, 240, 308, 332, 418, 441, 489, 530, 533, 599
Tennessee Coal Production 172
Tennessee Mining News, 172, 220, 308, 332, 376, 441, 530, 551, 596
Terminal City Co., Ltd., Nova Scotia. 377
Terra Cotta Lumber Houses..... 328
Terrenoire Works, France..... 460
Terrible Mine, Colo..... 416
Tesaro Mine, Lower Cal., Mex 464
Tesla Motor Co..... 170
Tesorita Mine, Lower Cal., Mex..... 464
Testing Boiler Plate 215
Testing Copper Salts 370
Texas Foreign Land Owners..... 295
Texas Mining News 242, 441, 464, 551
Texas R. R. Forfeit Land Grants .. 551
Texas & Pacific Coal Co., Texas..... 441
Tharsis Mg. Co., Spain 421, 465
Thaw, William 73
Theology and Journalism..... 352
Theoretical and Practical Treatise on the Strength of Beams and Columns 436
Theory and Practice 3
Thetford Asbestos Mg. Co., Quebec.... 243
Thies, Adolph..... 308, 464
Third Mine, Brit. Col..... 377
Thomas Furnace Co., Ohio..... 94
Thomas-Gilchrist Process..... 191
Thomas Iron Co., Pa., 170, 198, 445, 467, 511, 599
Thomas, John M..... 122
Thompson, A. B 240
Thompson & Baker Coal Cc., Mass... 576
*Thomson Electric Welding Co., *136, 439, 495, 527, 594
Thomson, Sir William, on High Potential Currents 386
Thomson-Houston Elec. Co., 49, 71, 78, 94, 170, 218, 222, 266, 287, 330, 378, 396, 418, 439, 484
Thornberg's Patent Derricks, Contracts for..... 263
Threshing Mill, Prize for 417
Thurston, B. F., on Heroult Process.. 387
Thurston, R. C. Ballard 594
Thurston, Prof. R. H 546
Thurstone, Wm 127
*Thwaite Oil-Fired Forge..... 324
Tibbits, J. H..... 484
Tichenor, Asst. Sec'y, Decision of..... 461
Tichenor, Asst. Sec'y, on Points to Importers..... 411
Tides in Natural Gas Wells 121
Tidewater Oil Ref. Co., N. J 484
*Tie Question and the *Railroad Gazette*..... *277. 295, 363
*Ties, Railroad Metal. *210, *277, 295, 363, 517
Tiffany & Co..... 280, 305
Tiffany's Display of Jewels & Silverware in Paris 280
Tiffin Nail Works, Ohio 146
Tiger Mine, Idaho..... 96
Tilly Foster Iron Mines, N. Y..... 50
Timber and Mining Claims..... 497
Timber Cutting in Nev., the Senate Report on 307
Timber Stolen, the Value of..... 385
Timber Suits against Mining Co.'s, 147, 305, 307, 364, 485
Timber Suits and the Preservation of Forests..... 364
Tin & Copper from Customs Returns, British Statistics of 101
Tin in Malay Peninsula 48
Tin Market Review.....Weekly
Tin Market, the London, in 1888..... 36
Tin Mines of Dakota, 18, 96, 375, 462, 508, 529, 573, 595
Tin Ores, Reduction of 526
Tin Plate in Chicago, Manufacture of. 451
Tin Mountain Mine, Dak..... 462
Tin Placers, Durango, Mex 332
Tin Shipments from the Straits..... 488
Tioga Mg. Co., Nev 82
Tlalpujahua, Mex., Mg. News..... 530
Todos los Santos Mine, Guanajuato, Mex..... 243
Todos Santos Mine, Nuevo Leon, Mex..... 52
Toledo Mg. Co., Mont 242, 331
Tolima Mg. Co., Col., Rep. of..... 596
Tome, Jacob 122
Tonawanda Nat. Gas Co., N. Y..... 444
Tools, American Shop, in England.... 412
Tools, American Style Necessary to Sell Foreign..... 216
Topton Furnace, Pa..... 594
Topedoes, Howell's, vs. Whitehead... 49
Tornado Mg. Co., Nev.....18, 147
Torreon Mine, Chihuahua, Mex...220, 332
Torrey, Herbert G..... 71
Torrezelva, Spain, Salt Mines of..... 195
Tortilita G. & S. Mg. Co., Ariz. .. 17
Tourtelotte Mg. Co., Colo.....241, 485
Towboat of the Knickerbocker Towage Co..... 547
*Tower, the Eiffel.....*112, 280, 327, 547
Tracy, Representative 71
Trade Schools, Petition to Congress for Maintenance of..... 176
Trade Works in India 15
Trade of Chili..... 14
Tramway Cars Propelled by Electric Motors 527
Transcaucasia, Manganese Deposits.. 486
Transmission of Power by Compressed Air..... 9
*Transmission of Power, Electric, 8, *498, 570
Transmission of Power Through a Bore Hole..... 348
Transvaal, a Good Field for Amerian Machinery..... 133
Transvaal Gold Mines.....12, 206, 273, 409
Tratman on Metal Ties..... 547
Treadwell Mine, Alaska.....440, 507
Treatise on Hydraulics..... 217
*Tree Felling Machine, Electric..... 119
Trenton Iron Co., Trenton, N. J....374, 527
Trenton Rock Oil Co..... 420
Trimbath, George..... 352
Trinidad Cl. & C. Co., Colo..... 171
Trinidad Mine, San Luis Potosi, Mex. 442
Trinidad Mine, Sonora, Mex..... 98
Trinidad Roll. Mill & Iron Co., Pa.... 373
Triphylite 385
Tripoli Industry, Utah..... 332
Trippel, Dr. Alex., on New Gold Field of Ariz..... 275
Trippel, Dr. Alex, on the Arizona Copper Industry..... 432
Trowbridge, Charles August..... 373
Trowbridge, Prof. John, on New Uses of Photography..... 407
Troy S. & I. Co., N. Y.....106, 122, 373, 396
Trumbull Iron Co., Ohio..... 71
Trust, a Coal, on the Monongahela... 148
Trust Epidemic 495
Trust Stocks, 100, 126, 173, 334, 356, 378, 422, 444, 466, 487, 495, 510, 553, 576, 597
Trust, the Beam..... 77
Trust, the Lead.....266, 487, 553, 576
Trust, the Pig Iron Warrant..106, 107, 128, 203
Trust, the Salt..51, 215, 272, 290, 30?, 582, 604
Trusts Securities, Insecure..... 495
Trusts and Syndicates..... 407
Trusts and Their Tendencies..... 108
Tryangle Mine, Colo..... 397
Tubular Wheel Co., Pa..... 218
Tumacacori and Calabazas Land Claim in Arizona..... 260
Tuna Oil Co., Pa..... 194
Tunnel Colliery, Pa..... 51
Tunnel, the Huantajaya, Chili, Arrangements for Boring It..... 442
Tunnel to Float Timber, a Norwegian..... 260
Tunnel Under the Hudson River..396, 546
*Turbine, Parson's Compound Steam. 62
Turkey Foot Oil Dist., W. Va..... 173
Turkey, Manganese Iron Ore Imported from..... 396
Turner, E. T..... 594
Tuscarora Con. Mg. Co., Nev..... 376
Tuscarora Dist., Nev., Development.. 550
Tuscarora, Nev., a New Mill at...193, 220
Tuttle, H. A..... 94
Two Sisters Mg. Co., Colo..... 171
Tyro Mill. & Mg. Co., Cal..... 462

U

Uintah Group of Mines, Utah..... 52
Ulay Mine, Colo..... 240, 353
Umatilla Coal Co., Ore..... 97
Uncle Sam Mine, Cal..... 353
Uncle Sam Mg. Co., Dak..... 485
Underground Electric Wire Question, 60, 158, 253
Union Bridge Co., N. Y..... 71
Union Concentrating Co., Utah 376
Union Con. Mg. Co., Nev..... 82
Union Gold Mine, Cal..... 528
Union Iron Works, Cal..... 309
Union Light and Fuel Gas Co..... 146
Union Mill, Nev..... 147, 354, 375
Union Mine, Lower Cal., Mex..... 464
Union Mine, Ut..... 19
Union Mine Wis 398
Union Mg. Claim, Cal..... 330
Union Mg. Co., Nev..... 266, 441, 465, 552
Union Oil Co..... 376
Union Pacific Mines, Wyo..... 52
Union S. & I. Co., Mo..... 170
Union Sampling Co., Colo 95
Union Steel Co., Ill..106, 246, 268, 289, 333, 418
United Rubber Co., N. J..... 527
United States Aluminum Co., Ill..... 329
United States and Canada, Future of Phosphates in..... 181
United States Depository Mg. Co., Colo., Consolidation of..... 507
United States Elec. Lighting Co. vs. Manhattan Elec. Light Co., N. Y.... 373
United States Elec. Light Co.....170, 173
United States Geological Survey..... 594
United States Gold Placers, Colo., 528, 550
United States Mining Law, Proposed Change in..... 90
United States Mint, Work and Needs of..... 496
United States Volta Elec. Battery Co., Me..... 372
United States vs. the Maxwell Land Grant Co..... 124
United Verde Copper Co., Ariz...218, 573
University for Victoria, Aust., Technical..... 13
Untemeyer, Samuel.....219, 331
Utah Central R. R. Co., Utah..... 51
Utah Con. Mg. Co., Nev., 148, 173, 266, 285, 356, 465, 552
Utah Mining News, 19, 74, 97, 124, 148, 172, 194, 242, 265, 285, 308, 332, 354, 376, 420, 441, 464, 486, 509, 551, 574, 596
Utah Mg. & Mfg. Co. vs. Dickert & Meyers Sulphur Co., Utah..... 596
Utah, Nevada & California R. R..... 461
Utah & Montana Machinery Co., Utah..... 376
Ute Mine, Colo..... 240
Utica Mine, Cal..... 192
Utica Mg. & M. Co., Colo.....95, 462

V

Valentine, Louis..... 548
Valentine's Statistics of Metal Production in 1888..... 94
Valera Mine, Sonora, Mex..... 98
Valladares, Socorro & Juarez Mg. Co., Lower Cal., Mex..... 194
Vallecillo Mines, Nuevo Leon, Mex.... 332
Valley View Mg. Co., Colo..... 529
Valton, F., on Chrome Iron Ore as a Furnace Lining..... 394
Value of the ENGINEERING AND MINING JOURNAL.16, 134, 160, 184, 319, 474, 562
Value of French Walnut..... 14
Vanadate of Lead, Deposits of, in Chihuahua, Mex..... 286
Vanadium; Its Occurrence and Uses.. 519
Vanadium and Its Value..... 466
Vancouver's Coal Deposits, Brit. Col.. 220
Vancouver C. Mg. & L. Co., Ltd., Brit. Col..... 377
Vanderbilt Mg. Co., Colo 573
Vandyke Coal Co., Wyoming..... 52
Van Dyke, Peter..... 572
Van Nostrand, H. L..... 373
Van Vleck, Joseph.....170, 352
Venable, Wm. H..... 377
Venezuela, S. A., Mining News....464, 530
Vera Cruz, Mex., Mining News..... 286
Vermeule & Bien..... 439
Vermillion Dist., Minn., Iron Ore Production for 1888..... 146
Vermillion Dist., Minn., Iron Ore Shipments..461, 489, 507, 527, 548, 573, 594
Vermillion Range, Iron Claims Invalid..... 193
Vermont Marble Co., Vt..... 19
Vermont Mining News..... 464
Vesuvius, the Speed of the..... 115
Victor Lead & Zinc Co., Mo..... 373
Victoria, Aust., Technical University 13
Victoria Gold Mg. Co., Ala..... 58
Victoria Iron Furnace and Mines, Va., 49, 594
Victoria Mine, Ont..... 98, 243
Victoria Mg. Co., Colo., 17, 72, 123, 171, 219, 306
Victoria Mg. Claim, Dak..... 485
Vienna Co., Idaho..... 306
Villard, Henry.....124, 396
Vincent, Prof. M. C....18, 72, 219, 352, 375
Viola Co., Ltd., Idaho..... 123, 595
Violette on Railroad Extension in Australia..... 593
Virgin Run Gas Co , Pa..... 464
Virginia Mining News, 97, 125, 148, 172, 308, 396, 441, 509, 530, 551
Virginia C. & C. Co., W. Va..... 354
Virginia Mine, Cal..... 507
Virginia Brick Kilns in 1612..... 526
Virginia Coal Fields.....64, 85, 134
Vishnue Mine, Utah..... 596
Vital Statistics for the Census Report..... 561
Vivian & Co.'s Norwegian Nickel Mines..... 327
Vizina Mine, Ariz..... 419
Volunteer Mine, Dak..... 375
Volunteer Mine, Mich..... 354
Volumetric Estimation of Nickel 481
Volumetric Method of Determining Manganese..... 394
Von Destinon, E..... 122
Voorhees, Senator..... 71
Vulcan Iron Works, Ill..... 71

W

Wadsworth, M. E 263
Wages of Coal Miners in Colo..... 440
Wages of Coal Miners in Ill., 419, 463, 485, 508, 529
Wages of Coal Miners in Ind., 96, 146, 263, 306, 440, 595
Wages of Coal Miners in Iowa 96
Wages of Coal Miners in Ohio..... 420
Wages of Coal Miners in Pa., 90, 97, 124, 149, 205, 242, 283, 331, 373, 420, 464, 530, 546
Wages of Coal Miners in Tenn 354
Wages of Coal Miners, West Superior, Wis..... 418
Wages of Coke Workers in Pa., 19, 90, 191, 354, 357
Wages Determined by Schuylkill Coal Exchange..... 51, 149, 242, 331, 420, 530
Wages in Coal Mining in Ala. in 1888.. 188
Wages of Furnace Employés in Ohio, Reduction of 484
Wages of Iron & Steel Workers in Pa., 218, 240, 263, 305, 484, 592
Wages of Miners in Sinaloa, Mex. ... 442
Wagers of Puddlers in Pa., 170, 218, 240, 263, 305
Wages, Schedule Adopted by the Journeymen Metal Roofers, Tin Plate and Sheet Iron Workers' Protective Ass..... 146
Walburn, A. W., on ENGINEERING AND MINING JOURNAL as an Advertising Medium..... 319
Waldamer Electric and Magnetic Brake Co., Ohio..... 484
Walker I. & C. Co., Ga..... 50
Wall, Col. E. A..... 376
Wallace, R. B.....218, 219, 240
Wallace, J., on American Ozokerite.. 121
Wallace, William, the Chimney Repairer..... 505
Walnut, French.....14, 118
Walsh Process of Smelting and Reducing Zinc Ores..... 331
Walters, Thos..... 354
Walton, Prof. A. E 573
Ward Cons. Mg. Co., Colo., 95, 397, 531, 552
Ward, Thos 604
*Wardwell Stone Channeling and Quarrying Machine..... 500
War Eagle Mine, Nev..... 51
Waring, Robt. B..... 71
Waring, W. G..... 220
Warner Iron Co., Tenn..... 49
Warrant Trust, a Standard-Oil-Pig-Iron.....107, 128, 203
Warren Chemical & Mfg. Co., N. Y.. 527
Warren Furnace, N. J..... 439
Warrior Mark Mine, Colo.....17, 374
Warrior Run Colliery, Pa..... 354
Warsaw Salt Co. vs. Hydraulic Salt Forcing Co..... 71
Wasatch Mg. Claim, Utah..... 194
Washburn & Moen Mfg. Co., Mass., 122, 192
Washburn Mg. & Milling Co., Mich.. 550
Washington Cons. G. and S. Mg. Co., Dak..... 485
Washington Mine, Idaho.....529, 550
Washington Terr. Mining News, 97, 148, 194, 308, 332, 509, 530
Washington Terr., Coal and Coke Industry of..... 308
Warwick, Chas. F..... 439
Watanabe, H., on Science and Technology in Japan..... 258
Watches and Clocks, Electric..... 417
Watchman Detector, Electrical, in Use in Pa..... 530
Water, Brine and Gas Well, Combined Fresh..... 11
Water Power from Artesian Wells .. 327
Water Power Head, the Highest in the World 394
Water Purification by Iron..... 14
Water and Steam Power, Comparative Cost of 502
Water,the Purification of, in Colo.... 330
Waterproof Electric Motors..... 461
Waterman, Aug 352
Waterhouse Elec. & Mfg. Co . 170, 173
Waterloo Mg. Co., Cal..... 484
Watson Medal, Award of 373
Watson Mine, Nev 331
Watson, John C., on Stocks of Copper in the U. S 452
Watson & Gisbon..... 94
Watt, Alexander, on Electrolysis of Copper Salts 161
Watt, Alexander, on Electrolysis of Chloride of Sodium..... 110
Watt, Alex., on Improvements in Treatment of Zinc..... 478
Watts, I. H., on the Mexican Ore Question 563
Wear of Steel Rails 348
Weatherford Coal Co., Tex..... 242
Weatherstone, George 264
Webb City Mg. Co., Mo..... 375
Wedding, Dr., on the Pietzka Revolving Puddling Furnace..... 188, 279
Weeks, Joseph D 396
Weightman, Dr. Wm 170
Weight per Cubic Foot of Different Sizes of Anthracite..... 1
Weights and Measures, the Extension of the Metric System of..... 408
Weinberg, E. A..... 71
Weingaertner, August..... 527
Welch Mine, Colo 17
Welding Cable Rope by Electricity... 527
Welding Pipes by Electricity 495
*Welding Process, Benardo's Electrical..... 13
*Welding, Thomson's Electric, *136, 439, 495, 527, 594
Weldon Mg. Co., Ariz., 82, 173, 266, 356, 461, 465, 552
Well, a Combined Fresh Water, Brine and Gas..... 11
Wellington, A. C., Coal Co., Mass..... 576
Wellman, S. T..... 49
Wells, Artesian, as a Source of Motive Power..... 121
Wells, Fargo & Co.'s Statement of Mineral Production of Utah..... 51
Wellston Furnace Co., Ohio 49
Welsbach Incandescent Gaslight Co., Pa..... 418
Welton Coal and Salt Co., W. Va..... 285
Wentzel, R. S..... 242
Wernse, H. H..... 595
West, A. R 329
West Beaver Mine, Ont..... 464
West, Dr. Chas., and the Brooklyn Institute 474
West End Mine, Ont 98, 464
West End Mg. Co., N. J 484
Western Iron Ass. Disbanded..... 506
Western Light Ass., Mo., Consolidation of..... 49
Western Nail Mfrers. Ass..... 548
Western Ore Mill. Co., Colo..... 123
Western Pa. Coal Miners' Ass..... 551
Western Sale Agents, Coal, Meeting 334
Western Steel Co 106
Westfield Mine, B. it. Col. 377
West, George 194
West Granite Mountain Mg. Co., Mont., 219, 287, 307, 310, 331, 334, 397, 487, 508, 529, 553
Westinghouse Air Brake Works, Pa., 218, 352
*Westinghouse Alternating Current Meter 412
Westinghouse Alternating Electric Light Dynamos 461
Westinghouse Building Kept Cool by Electricity..... 527
Westinghouse-Church-Kerr Co. and the Edison Elec. Light Co..... 439
Westinghouse Cons. Elec. Light Co. vs. McKeesport or Edison Elec. Light Co 484
Westinghouse Elec. Co., Pa., vs. Manhattan Elec. Light Co., N. Y..... 373
Westinghouse Electric Co., 71, 170, 173, 266, 373, 461, 484, 506
Westinghouse Engines with Interchangeable Parts 461
Westinghouse, George, Jr.....170, 173
West Jay Gould Mine, Mont..... 147
Westmoreland Coal Co., Pa 148, 285
Westmoreland & Cambria Nat. Gas Co., Pa..... 97, 530
Weston, Edward..... 373
Weston, W. W..... 353

West Point Boiler Works, Pa..... 263
West Shenandoah Colliery, Pa..... 19
Westside Mg. Co., Mich..... 147
West Superior Chamber of Commerce..... 506
West Superior Coal Dock..... 5
West Virginia Oil Fields, Developments of..... 173
West Virginia Mining News...148, 285, 354
Wewoka Mg. & Mfg. Co., Ala..... 94
Weymouth, Geo..... 374
Wheeler, J. B..... 146, 218, 241, 396, 527
Wheeling, Lake Erie & Pittsburg Coal Co..... 50, 72
Wheeling Gas Co., Pa..... 441
Wheeling Steel Works, W. Va..... 283
Wheelock, Mr..... 439
Whepel, Adolph..... 418
Whitebreast Fuel Co..... 305
White Crow Mine, Colo.....95, 462, 528, 549
White Crow & Osceola, Colo., Litigation..... 462, 528, 549
White Crown G. Mg. Co., Colo..... 528
White House Cons. Mg. Co., Colo..... 397
White Lead Trade..... 34
White Lead Process, the Hannay's..... 483
White Lead Trust..266, 487, 553, 576
White Lead Manufacturers, Meeting 218
White Lead and Zinc Paint, Making of, in Maine..... 147
White, Samuel, Jr..... 396
White, Thos. H..... 18, 71, 240, 373, 397
*Whitney Glacier, Cal..... 433
Whitney, J. Parker..... 441
*Whitworth's, Sir Joseph, Experiments on Compressing Steel..... 456
Wild Cat Mg. Claim, Dak..... 485
Wild Goose Mine, Nev..... 574
Wildman Mine, Cal..... 123, 462
Willard, Wm. P..... 352
William, D. D..... 122
Williams, Evan..... 354
Williams Engine Co., Wis.....330, 418
Williams, John..... 170
Williams, F. J. S., on Mica..... 319
Williams, John T., on Electric Rapid Transit..... 451
Williams, Oliver, on Anthracite-Iron-Semi-Centennial..... 134
Williams, Price, on Duration of British Coal Fields..... 302
Williams, Prof. Geo. H..... 16
Williamson, Mr..... 122
Williamson, Isaiah V..... 240
Williamson Furnace, Ala..... 94
Williamson Free School of Mechanical Trades..... 240
Wilson, W. A., on Lixiviation of Gold Ores..... 346, 366, 388
Wing & Evans..... 283, 316, 594
*Wire Cord, Quarrying by..... 321
Wire Nails for the East..... 327
Wire Patch Mg. Co., Colo.....72, 509
Wire Rods..... 37
Wire Rope Haulage, Erection of, in Connellsville Region, Pa..... 19
Wires Soles for Boots..... 327
Wisconsin Mining News....98, 148, 172, 393
Wiswell's, I. C., Amalgamation Process..... 4, 48, 123
*Witherbee, Silas H..... 548, *564
Witherell, N., on the Corwith Failure..... 4
Witherow, James P., & Co.....94, 464
Wollberg, S..... 396
Wolverine Mine, Mich..... 51
Wood, Capt. A. P..... 375
Wood Cloth..... 215
Wooden Ties vs. Metal..... 547
Wood-Oil Industry of Sweden..... 394
Wood Pulp Industry in Norway..... 321
Woodside Mg. Co., Utah..... 551
Woods, Wm. Henry..... 594
Worcester Steel Co., Mass.....106, 148
Works, Foreign, Cannot Enter Free in the U. S..... 396
World's Production of Copper in 1888. 31
World's Production of Zinc since 1880 35
Wormer, G. S. & Sons, Failure of..... 527
Worthington, Henry R..... 506
*Worthington Independent Condenser 209
Wright, Carroll D..... 192, 572
Wright, Charles E..... 263
Wright, Samuel C..... 439
Wrought Iron Tube & Boiler Pipe Mfrers Ass.....439, 577
Wuchow, the New Chinese Port..... 14
Wurtz's, Dr. Henry, Electro-Magnetic Tachyphore..... 473, 475
Wyatt, Dr. Francis..... 527
Wynn Coke Co., Pa.....124, 193
Wynkoop, W. C..... 95
Wyoming & Denver Oil Pipe Mg. Co. 330
Wyoming Oil Fields.....172, 330, 332
Wyoming Mining News, 172, 283, 332, 376, 574
Wyoming Standard Oil Co., Wyoming 332
Wyoming, Salt Lake & California R.R. 464

Y

Yaqui River Placer Mg. Co., Mex.... 399
Yankee Girl Mg. Co., Colo..... 573
Yarrow & Co. on American Shop Tools..... 412
Yavapai Mg. and Irr. Co., Ariz..... 146
Yellow Jacket Mg. Co...Nev., 73, 193, 374, 463, 529
Yellowstone Park, Carbonic Acid Springs in..... 344
Yguana Mg. Co., Nuevo Leon, Mex... 332
York, James E..... 352
York's Run Nat. Gas Co., Pa..... 464
Youngstown Coke Works, Pa..... 354
Yttria Minerals..... 328
Yuba Mine, Nev..... 51

Z

Zacatecas, Mex., Mining News, 52, 194, 442, 509, 574
Zacualpa Mine, Chihuahua, Mex..... 194
Zeilic Mine, Cal..... 374
Zalinsky Dynamite Gun, Rights Sold to Russian Government..... 461
Zane, John P..... 439
Zehner's, W. D., Experiments on Weight of Anthracite..... 1
Zeller & Seigler, Messrs..... 96
Zempoaltepetl Volcano, Mex., Reported Discovery of Opals at..... 332
Zinc and Cobalt, Separation of..... 500
Zinc Blende Mg. Co., Ark..... 122
Zinc and its Ores, Electrolytic Treatment of..... 478
Zinc and Nickel, Separation of..... 482
Zinc Exports from the U. S..... 127
Zinc from Cadmium, Electrolytic Separation of..... 571
Zinc Imports of U. S..... 101
Zinc Industry of Belgium..... 459
Zinc Market, the London..... 35
Zinc Mines of Missouri.....284, 307
*Zinc Mining in Arkansas.....305, *431
Zinc Process, the Croselmire.....17, 135
Zinc, Production of, in 1888....1, 28, 35, 175
Zirconium and its Value..... 166
Zubiran Furnace, Chihuahua, Mex...